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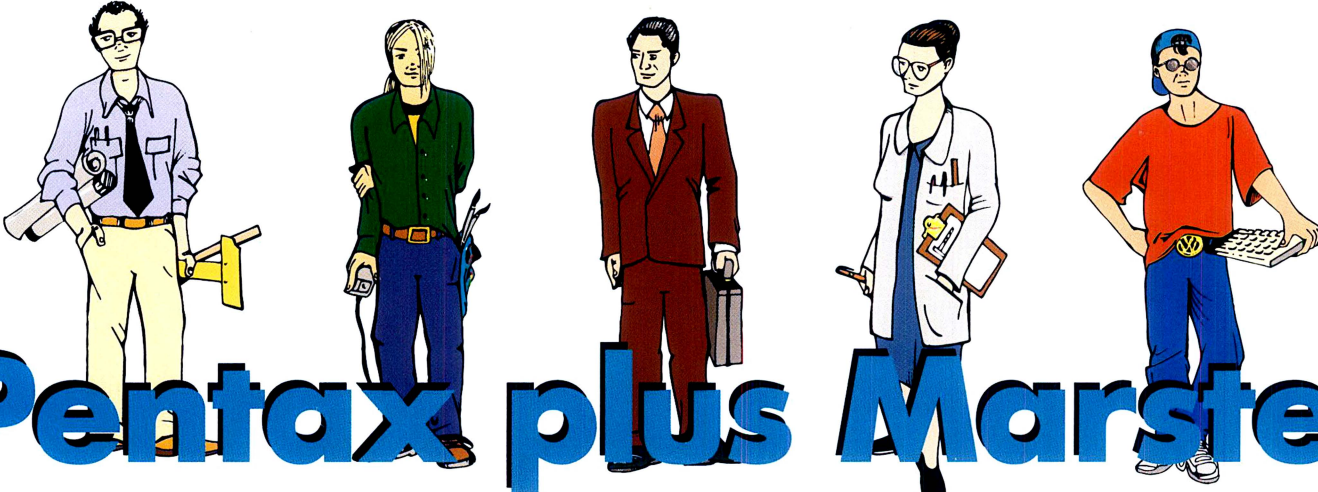
FOUR NEW DEVICES REVIEWED

THE CD-ROM REVOLUTION SPEEDS UP



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Sometimes the best mouse is No Mouse. This is the ideal accessory for all Windows users. No Mouse eliminates the need for a hardware mouse and provides precise pixel-by-pixel control over the mouse pointer using the cursor keys. This gives you all the function and convenience of a conventional mouse with a cord - without the tangles, without the space hassles. As an added bonus for LCD screen users, No Mouse includes EasyFind, which triples the height and width of the Windows mouse cursor.

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ISSN 0725-3931.**MASS STORAGE DEVICES****32****THE CD-ROM REVOLUTION SPEEDS UP****58****NEXT MONTH INCLUDES**

Desktop publishing is no longer a niche, but part of the computing main-
stream. But not everyone needs the likes of PageMaker, Ventura or Quar-
kExpress – our feature will tell how to get effective results without a major
investment. A good set of PC utilities is a must for every user, but they all
seem to stress different features: in March, we match those features to
your needs. We also explain just how significant the hottest product in the
Mac world, QuickTime, is going to affect your computing feature. And we
take a look at three Windows compatible entry-level networks with results
you might find surprising.

This month's cover: Design and spelling by Jake Kennedy.

*The Australian Publication Emblem on our front cover proudly signifies that our editorial con-
tent, with the exception of overseas news items, is wholly produced and edited in Australia.*

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American Graffiti

On CDs: 'If all that happens is to cram more text onto a CD, they will remain strictly a commercial/industrial technology.'

Canberra Comment

Technology directions: 'A conference of business and technology leaders believes that most of us want an entirely different approach.'

Industry Updates

Bodyforce developed to help athletes; Paramount buys Macmillan; Digital Assistants for the consumer; Windows NT needs 8Mb of RAM; Outback kids learn with Remote; Patent for optical computer advance; And the winners ...; Toshiba publishes survey findings; Radius/NEC team up; Intel reveals '586; Software college to open; IBM/Apple deal approved.

Tech Tips

Lost hard disk; Colour printing; Remote install in LapLink III; Easing the RAM cram; Starting a BBS; Graphic file formats; BIOS drive support; Printing graphic characters; Enhancing DTP printing.

10th Personal Computer of the Year Awards – The Winners!

Some last minute releases threw the well-organised judging into confusion, giving us one surprise and one obvious choice for the Awards.

Mass storage devices

When you mention removable media, most people think of floppy disks and cartridge tapes. Mark Cheeseman revved up four products which fall somewhere in-between.

Infrared cableless LAN

BICC Communications recently announced the availability of InfraLAN. An innovative cableless local area network system based on infrared technology.

PowerMenu

Looking for a DOS menu system and file manager? Communications program? Security system? File transfer utility? Read on ... Jake Kennedy has found just the item.

Educational Software

Adult education – do it yourself: 'Whether your goal is of a personal nature or if it relates to your career or academic performance, one of these courses may help you on your way.'

New Connections

Dial the time; LANtastic for Windows and twisted-pair; A real entry-level network; Netware for OS/2; MicroAustralia focuses on networks; Recession fuels PC networking; Open Systems forum; Interesting boards.

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The CD-ROM revolution speeds up

CD-ROM technology is paving the way for multimedia on PCs, as well as offering the ideal medium for software distribution.

Memories are made of this

Confused by the jargon associated with memory? Stewart Fist clarifies the terminology and concepts.

That's Entertainment

Something for everyone: Eye of the Beholder II; Boston Bomb Club; Castles Campaign disk I; Vengeance of Excalibur; The Blues Brothers; The Simpsons; Bard's Tale Construction Set; Breach 2; Chessmaster 3000; Hoyle's Book of Games; Charge of the Light Brigade; Merchant Colony; Shuttle.

Digging with a notebook

A LapPac notebook proved itself during a recent archaeological 'dig'.

LTE goes Lite

Compaq takes on the notebook market with new models and aggressive pricing. Mark Cheeseman looks at the two newcomers to the market.

Take Note

The Ad Lib MIDI Kit: 'In coming months I'll be covering whatever comes along in music software and hardware.'

The Forth Column

Embedded controllers: 'The Forth-based embedded controller software development system, THInC, has taken another step forward.'

Realizer

Jeff Richards reports on a complete Windows programming toolkit for Basic programmers, which makes creating Windows applications quick and easy.

Write on Q.

Revolution in education: 'Watching the computer industry develop has been truly awe inspiring.'

Sharp's pocket powerhouse

If you thought the notebook was as small as you could get in a full-featured PC, read on ...

IBM Underground

Address Manager and NJFF: 'Another nice feature of Address Manager is its ability to create up to 32 user-defined lists within a single database.'

Windows Wonderland

TakeNote: 'It has some distinct limitations, but within those limits it is powerful, convenient and adequately flexible.'

Personal cash machine

Would you like to earn some extra money? Why not use your PC? John Bailey offers a few suggestions ...

Write Bytes

Dr.T; Telebit is approved; Multimuddia.

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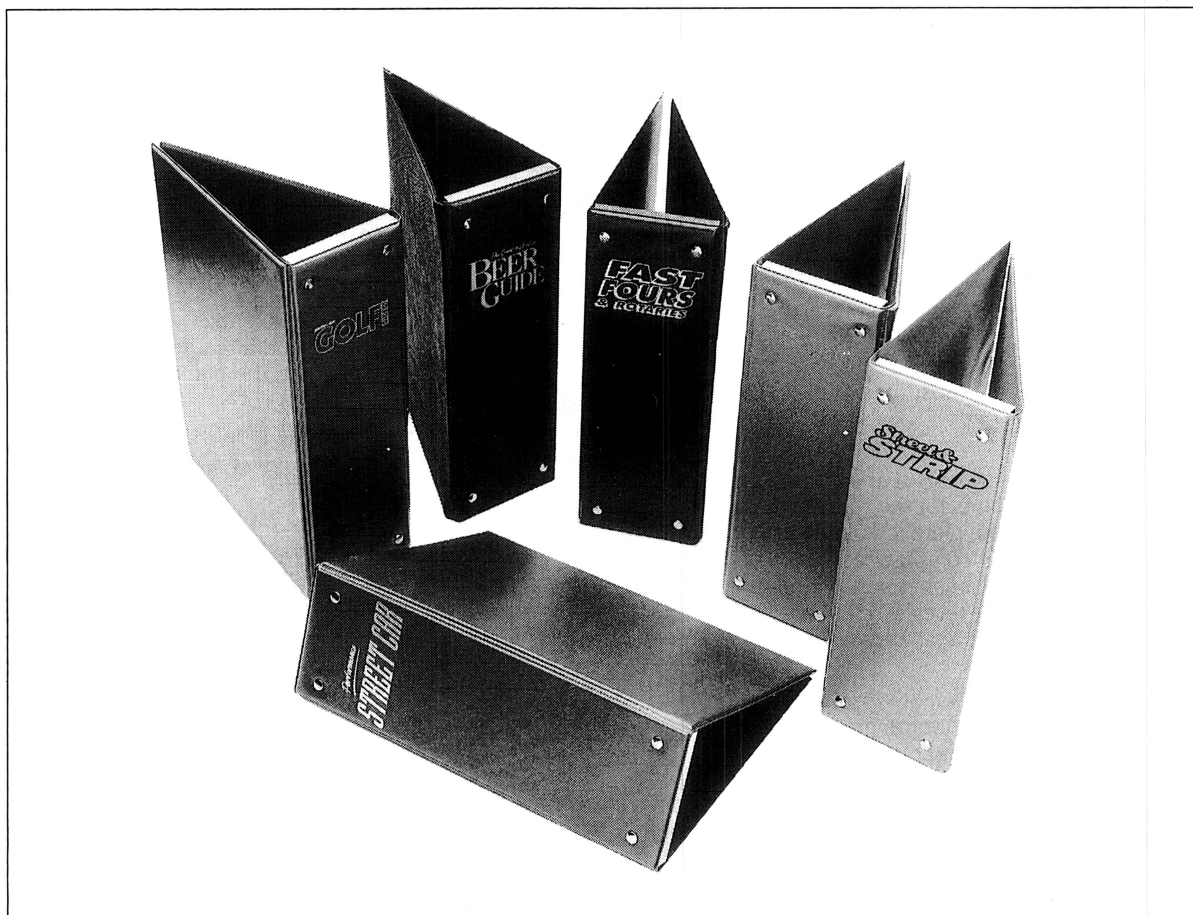
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A3 laser; Foxy notebooks! Network accounting; Personal word processor; Paradox access to SQL databases; Faxit; Capital accounting; The printed word; CD-Share; The Notebook SX; Central Station; Futurus; More Pizazz; Grammatik IV upgrade; Dynamite Pack; Customised labels; Artisoft's 10Base-T range; Windows Control Palette; Norton AntiVirus 2.0.

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JAKE KENNEDY

A man and his vision

I had coffee this morning with a man and his vision. Yoshi Takayama is associate senior vice president of the NEC Corporation. He oversees the worldwide operation of the Computers and Communications division which is responsible for products as diverse as printers and PABXs, cellular phones and desk-top computers.

Now, as part of the computer industry, constantly bombarded by bombastic press releases and sensational gossip, I find myself often loosing sight of the 'big' picture. Like so many of us who write about computers, I often discover myself thinking of them as an end in themselves with little bearing on my day to day life. It's refreshing to hear the thoughts of someone who can see the industry from the inside and who is helping to guide the development of tomorrow's technology – someone like Mr Takayama. For some years he has been steering the movement of NEC's C&C products. He foresees the day – not that far away – when computers, particularly in the form of battery-powered portables, will become a whole different class of 'tool' than they are today. In fact, they will be essential to be part of a new world.

Imagine a colour TV, AM/FM radio and a cellular phone built into a 3kg notebook ... add voice mail, cellular networking and a pen-driven interface, then think about how that could change your life – and you will see what I mean. The *cul de sac* of today's computing becomes an information freeway, a freeway with interchanges at every point in your life. Information, infotainment, edutainment and a variety of yet-unnamed '-ments' and '-tions' will be constantly at your finger tips.

Yoshi Takayama gave me one of the



March 1985

I suspect that in the years to come we'll look back at the IBM as a machine in transition, while the Macintosh is definitely designed for its target market – **Les Bell, Editorial, p4.**

No hard disk is ever big enough, and what you conservatively estimated would be big enough for two years will fill up in two months – **The Hard Word on Disks, p36.**

most exciting insights into the future of personal computing I've had. Tomorrow we will all be part of his vision ... for that we can only thank him and the hundreds of other unsung visionaries.

You will pay more!

I'VE NEVER BEEN a political person, but the long-standing attitude of successive federal governments towards ordinary taxpayers is pushing me towards radical action. Medical services, telephones, and the post are essential services; services that should be the right of every Australian, not an excuse to squeeze more reve-

nue from an already overtaxed population. That these services are overpriced (and unnecessarily unfriendly) was proven when it was announced that Telecom would have a competitor – Telecom has since become acutely aware that there are real people out there, improving service and reducing charges.

The high-handed activities of Australia Post could certainly use some competition, too. Its latest act of disdain is to scrap the Registered Publications category of bulk mail and introduce Print Post, an arrogance that is going to add up to \$1.52 to the cost of your subscription to any magazine *each month*; alternatively, publishers may find it necessary to increase cover prices on the magazines so that subscribers (the most valued readers of any magazine) don't have to carry the entire burden. This, says Australia Post, is to 'help it achieve customer satisfaction'.

Australia Post needs to have the error of its arrogance pointed out. Write to Robert F. Ludlow, chief manager, mail and networks, Australia Post HQ, PO Box 1777Q, GPO Melbourne 3001 Vic. You can send your own views (and I hope they are as strong as mine) or send a copy of this page. Stop the arrogance now!

(I was also going to write this month on the Prices Surveillance Authority's enquiry into local software prices. On reflection, however, it is patently obvious that the enquiry is irrelevant in today's software market – most suppliers moved to address the discrepancies in local and overseas pricing last year; taking the currency exchange rates into consideration, almost every major package is priced (on the street, at least) within 10 per cent of the US price. Setting up such an investigation at this time seems to be merely an exercise in self-perpetuating bureaucracy.) □

Future Features

IN ADDITION to our reviews, technology updates and tips for users, each month we present features designed to keep you up to date with the latest developments –

April 1992

Desktop publishing and colour printers.

May 1992

Buying & Expanding a PC and Security.

Application stories – particularly those with the same theme as our features –

are always welcome. Unsolicited material must be received at least six weeks prior to the month of intended publication. Please address editorial enquiries on our features to Jake Kennedy, (02) 693 9959, and advertising enquiries to San Sri, (02) 693 9724.



HOWARD
KARTEN

On CDs

CD ROMS HOLD a potential which is literally incredible. As hardware and media prices continue to fall, applications unimagined today will become more feasible and will come into being. The key thing for getting the most out of them will be imagination.

This is not to say that one of those 'breakthrough applications' is necessary for the success of CDs as a medium. CDs are already viable. If you're publishing enormous quantities of straight text, CDs are a great choice. They're cheaper to produce and distribute, and easier to use, access and store.

But if all that happens is to cram more text onto a CD, they will remain strictly a commercial/industrial technology.

The computer industry is full of examples of unseen, overlooked opportunities, of technology which has been ahead of its time and which therefore languished. For example, computer graphics first appeared around the mid-sixties. At that time, graphics was almost strictly a curiosity, but not much more. No one dreamed computer graphics might have any practical applicability to business.

Another example: spreadsheets first appeared at the end of the 'seventies, on the Apple computer. Mitch Kapor, who went on to found Lotus Development, is usually credited with having written the first spreadsheet. Despite the fact that he'd spent only a short time in the computer industry, Kapor had a vision, he was able to see something which had been totally invisible to others.

In both of these cases, at the time when the technology became available, there was no model for it – no idea of how to use it, when or how or why it could be applied. Curiously, though, models for the technologies *did* exist elsewhere.

Is it possible that this situation has applicability to the case of CDs and the interactive and multimedia capabilities they possess?

In any case, the good news, and the bad news, is that there are no *direct* models around today – products or ideas which could be moved from another medium to CD, with little change. That's good news because it means that most thinking

about CDs is largely unshackled by past models of usage. It's bad news because with no real precedent whatsoever, it's that much more difficult to develop that first application.

(Some readers are already scratching their heads and saying: 'Don't these Yanks know they're already in use, for example, as a way of distributing large databases?' Sure. But that's basically just cramming more data onto a disk.)

It is the enormous capacity of CDs, combined with ideas such as multimedia hypertext and interactive video, which create their real potential. But because very few true multimedia applications have appeared so far – and in any case, are not widely known – few people have begun to think of the truly imaginative ways in which they could be used. I said 'literally incredible' in the opening paragraph very

*They're cheaper to
produce and distribute,
and easier to use, access
and store.*

deliberately.

The few applications I've thought of, strike me as fairly obvious. One is publishing different editions of magazines for different audiences. For example, the American news magazine *Time* currently comes in 11 regional editions, 50 state editions, 50 different metropolitan editions (for different cities), and 4 different demographic editions (for doctors, executives, and so on). All editions carry a common core of stories and adverts, and each edition has in addition ads and stories unique to it.

The printing technology and procedures for putting these editions together are well-developed. But if the magazine were published in CD form, different editions could be even more finely targeted – and could be stamped out even faster on a disk duplicator than on a printing press.

Similarly, some textbook publishers

have recently begun exploring the idea of custom-tailoring textbooks to certain markets or even to a professor's individual needs. That's very easy with CDs.

If you take the broader view, you could think of CDs as the ultimate in movable type – a printing press on which the 'type' can be moved around with such ease that you could create editions for tiny groups with ease, without even getting your hands dirty.

Even this idea is a little limited, though. Even with stories and ads, CDs would still have plenty of capacity for material other than text. A science article with a diagram could animate the diagram for added clarity. You could put sound on CDs. For example, a book on music might include actual excerpts or themes of composers; a medical textbook could include actual sounds of heart disorders or abnormal breathing.

There are still some problems to be overcome, though, before these CD applications come to fruition. For example, the crucial area of standards is still in flux, with at least three competing standards.

An even more serious problem lies in the people who create the material. Suppose you want to publish an encyclopaedia on CDs. To a very large extent, encyclopaedias are written by academics, and these folks are not generally famous for their ability to liven up their lectures with additional material such as relevant sounds. Science is an exception, since scientists can incorporate experiments and demonstrations into their lectures.

Another problem lies in how to create the links between material, particularly material in different modes (graphics, sound, text). Creating links is closely related to indexing, which is basically a craft, done manually by specialists and *not* by computer. Yet without high-quality links, CD material will still be basically linear material, not much more than text-on-disk.

Moreover, I suspect it's not going to be easy to select the kind of material which consumers will really take to. As it is, people do not take advantage of all the information available to them through their computers. □

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LANDMARK (V1.14 - MHz)	16	21	26	21	26	54	65	90	112	149	>200
MIPS (Power Meter V1.5)	2.3	3.2	4.1	2.8	4.1	7.8	9.5	8.5	11	14.5	21.5
MAX RAM (ON BOARD - MB)	4	4	4	32	32	16	32	64	64	64	64

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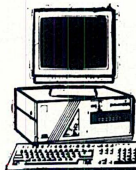
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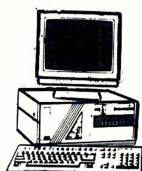
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386-65



80386-40 CPU 64K CACHE ON BOARD MEMORY
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75Mhz LANDMARK SPEED TEST
43 MEG HARD DISK
1.2M JAPANESE BRAND F.D.D
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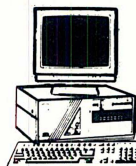
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486-157



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157Mhz LANDMARK SPEED TEST
85 MEG HARD DISK
1.2M JAPANESE BRAND F.D.D
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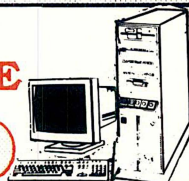
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486-157



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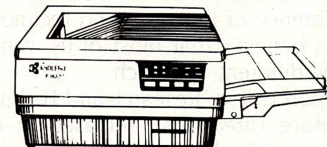
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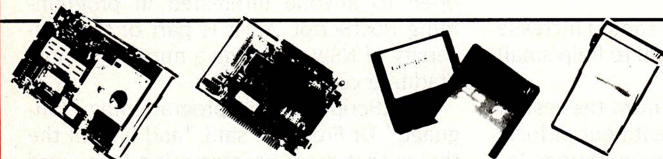
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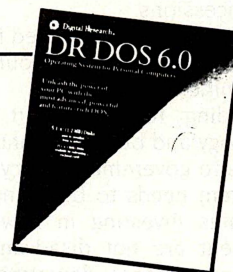
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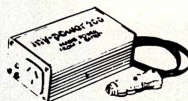
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Technology directions

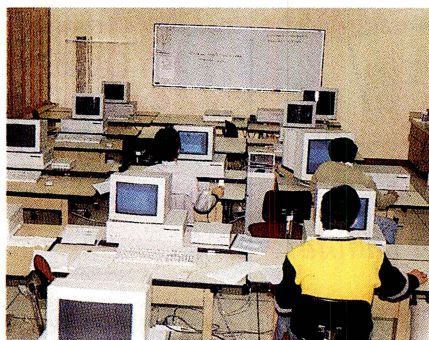
WHILE THE GOVERNMENT and opposition have been arguing about goods and services taxes, a conference of business and technology leaders believes that most of us want an entirely different approach.

A report called 'Research and Technology: Future Directions', released in conjunction with the conference, suggests that both government and opposition parties have no real idea how to help Australian technology enterprises and keep the country prosperous.

Business representatives at the conference claimed that it was short sighted for politicians and economists to expose Australian companies to overseas competition without support. Most other countries support their domestic technology companies with a range of sometimes hidden concessions.

The conference also called for some vision and leadership from our politicians and commercial chiefs.

According to the report, Australian technology and business want three main changes to government policy. Firstly, the tax system needs to be changed so that companies investing in new plant and equipment are not disadvantaged. Secondly, government departments should be forced to buy from local companies that are developing new technology products to give them a reasonable chance of



The ADFA computer lab.

success. The report points out that even in the supposedly free enterprise USA, companies given government contracts can often write off the extra cost of developing new products.

Finally, the government should increase the supply of venture capital to help small technology-businesses.

Where Australia differs from the rest of the world is in its poor treatment of local business. Most major US corporations for example pay low levels of federal taxes. Even with local and state taxes added, their tax burden is much less than that of similar Australian companies. Both European and US businesses get substantial tax breaks when setting up a new plant.

The Australian government seems not to be interested, then worries about our high cost of imports.

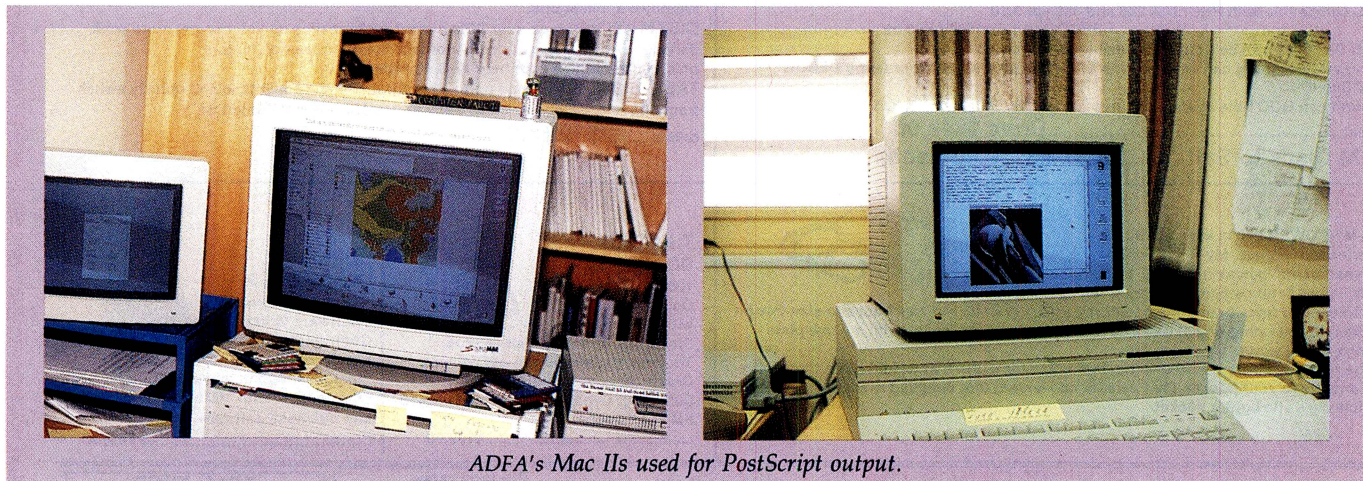
In a direct contradiction to the GST package which aims to reduce personal income tax, the conference heard that Australia already had the seventh highest per capita income of developed countries, and one of the lowest levels of personal taxation. The conference was told that California had unsuccessfully tried a personal tax rate reduction in the '80s, with the result that levels of government service to taxpayers had declined much faster than personal taxes.

PS on PostScript

DR GRAHAM FREEMAN from the Computer Science Department at the Australian Defence Force Academy, runs short courses in PostScript. The courses are open to anyone interested in programming PostScript. ADFA is part of the University of NSW and runs a number of post graduate courses.

'PostScript is a programming language,' Dr Freeman said, 'and has all the things that most programming languages have, such as simple assignment statements, loop controls and conditional statements.'

'Because PostScript is an interpreter, if you don't like any of the built-in operators you can redefine them. A common item



ADFA's Mac IIs used for PostScript output.

that you might redefine is an operation called showpage. When you have drawn your page, the last statement in PostScript is showpage which puts out your bitmap onto a piece of paper. Showpage is something that lots of people redefine. For example, if they want to put a fancy border round every page or print four pages reduced onto one sheet or only want to print out even pages.'

Programming flexibility is the upside of PostScript according to Dr Freeman. However there is also a downside which Dr Freeman says is the speed penalty, particularly with older PostScript printers trying to handle graphics.

Dr Freeman says that two recent developments, Level 2 PostScript and better colour management have made PostScript better. However these upgrades work faster with more powerful hardware. Dr Freeman has written a small PostScript program which produces colour separations for printing. To produce some graphics test separations on Apple hardware took 108 minutes. The same graphics run through a DEC workstation took one and a half minutes.

Programming flexibility is the upside of PostScript.

Level 2 PostScript also has better memory management. Dr Freeman said that with Level 1 you could run out of memory because there was no 'garbage collection'. Memory once consumed could not be re-used by the program.

Font specifications have stayed constant with Type 1 fonts and Type 3. Type 3 are user-created fonts while Type 1 are the 35 standard fonts built in to the printer. 'If you attempt to use a font type on screen that is not available in PostScript, the printer substitutes courier type,' Dr Freeman said.

PostScript uses a memory cache to avoid reconstructing type that has already been used on the page. However Dr Freeman points out that every time you change the type size on a page, processing takes place and the cache is slowed down. Big type sizes slow down the cache more.

There is a change in the PostScript market at the moment because Apple have now produced TrueType which is PostScript with some changes. 'TrueType ma-

chines will run PostScript unchanged,' Dr Freeman said.

One problem which PostScript Type 1 fonts and TrueType have not solved is corrected proportional scaling to large type sizes. 'With big type sizes you want a different relationship between the thin lines and thick lines so that the thin lines don't look too heavy. Commercial printers will actually use a different font for big type sizes to keep them looking nice.' Both PostScript Type 1 and TrueType fonts cannot cope with this problem.

Dr Freeman said his PostScript course is popular because reading both the Level 1 and Level 2 manuals alone does not help with problems. 'Debugging a PostScript program is hard work by yourself.'

If you are having problems with PostScript output one hint from Dr Freeman is to check the first two characters of the PostScript program. They should always be '%!'. This tells the printer that what follows is PostScript.

Duty free input

THIS MARCH MARKS changes in customs duty for state-of-the-art technology. From then, hi-tech capital equipment can be imported duty free if it has a significant performance advantage over locally made items. The equipment must be either faster, have higher output, be more flexible, have lower operating costs or improve quality.

Importers will have to prove they qualify for the duty free concessions each time a piece of advanced technology is brought in. There is no mention of extra support for locally made hi-tech products.

Bean counters

COMPUTERS ARE now commonplace items for many public service departments. Government decisions now are based more and more on the output from computers which some government users believe are incapable of being wrong. The infallible spreadsheet syndrome is abroad in the land.

Reality is different and one example is with the economy. Despite the best efforts of government, the black economy of undeclared earnings continues with recent estimates being more than ten billion dollars annually. One method of checking on this is the amount of 50 and 100 dollar notes in circulation. We have more than ever.

So probably the best advice for our government departments seeking reality is to look away from the screen or check their inputs. ☐

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INDUSTRY UPDATES



Bodyforce developed to help athletes

A COMPUTER PROGRAM and monitoring equipment has been developed by Adelaide firm Ticom Australia which helps athletes control and improve fitness.

The whole system, The Bodyforce Circuit, keeps track of athlete's performance and capabilities, allowing it to warn when over-exertion is a danger. Ticom is a computerised fitness equipment manufacturer and developer, and sees the Circuit as providing 'timely, results-oriented information to health club members, instructors or therapists during workouts'. Each user of the system purchases a personal coded key, which contains personal information such as bests and fitness plans and training goals.

The system displays a workout history, and allows the user to monitor their performance as the workout progresses. The data is stored on a network server, which is connected to all the Bodyforce computers attached to equipment. As goals are reached, they are automatically revised and displayed. The database of usage and results can be used by the health club to determine where equipment is being under- or over-used, as well as the more popular forms of exercise. □

Paramount buys Macmillan

ONE OF THE major publishers of computer-related books has ducked out from under the collapsing publishing empire of Robert Maxwell. In a deal that was nearing completion when Maxwell's body was found in the ocean after an apparent yachting accident, Macmillan Computer Publishing has been sold to Paramount Communications, a global entertainment and publishing company.

Macmillan will change its name to Prentice-Hall Computer Publishing, capitalising on the technical publishing reputation of another Paramount unit. Brady Books, the computer book and software imprint of Simon & Schuster, will become part of Prentice-Hall Computer Publishing.

Beth Silcox, a spokeswoman for Prentice-Hall Computer Publishing, told Newsbytes the deal is not expected to affect the publishing lists of any of the former Macmillan imprints or of Brady Books. While some Brady titles may compete with those of Macmillan's Que Books, Sams, Hayden, and New Riders Publishing imprints, she said, that will be nothing new for the company. Que and Sams have sometimes published competing titles before, she said, and 'we'll continue to do that editorially'.

Silcox added that no jobs are expected to disappear as a result of the buy out, at least not for the time being. 'The people that manage Macmillan Computer Publishing are still intact here and will continue to be here,' she said. Eventually, Brady Books warehousing will be integrated with that of the other Macmillan imprints.

Macmillan Computer Publishing was formerly a division of Macmillan, Inc., of New York, a wholly owned subsidiary of Maxwell Communications. Silcox said the sale was being negotiated well before Robert Maxwell's death and the present financial collapse of his publishing interests, though she said the sale was part of the Maxwell organisation's attempts to cope with financial problems it already had at that time. □

Windows NT needs 8Mb of RAM

RICK VIZACHERO, an editor for *Government Computer News*, recently reported in his column that the demo version of Microsoft's Windows NT operating environment is less than friendly when it comes to older MS-DOS applications' software or hardware.

Having seen it running on a 75MHz 80486-based computer, a workstation, and a 33MHz 80386, he reports that it appears the new 32-bit operating system, which Microsoft is putting up against the long-awaited IBM OS/2 2.0, will require a minimum of a 33MHz 80386 with 8Mb of memory to run.

A Microsoft demo technician reportedly gave out the standard line that 'well-behaved' MS-DOS programs are running OK under the as-yet unfinished Windows NT, but that some, notably those that deal directly with hardware, are having problems.

One computer industry insider pointed out that 'well-behaved' is just code for 'this one works!'

Digital Assistants for the consumer

APPLE PRESIDENT John Sculley, in his keynote speech at the Winter Consumer Electronics Show in Las Vegas, said that Apple plans to introduce consumer-specific computers by Christmas, 1992. The new computers, which Apple is calling Personal Digital Assistants (PDAs), theoretically wouldn't require any user skill and would focus on specific functions. Apple lists some examples as electronic books, electronic organisers, multimedia players, electronic note takers, display telephones, and personal communicators.

Sculley said that the concept of the PDA has been made possible by the transformation of traditional analog technology to digital technology. While in the past most consumer products were based on analog and left the user as a passive recipient, digital technology can allow the consumer to control what, when and how they receive and manipulate information.

Sculley said: 'The transformation from analog to digital technologies opens the possibility for a wide range of potentially very innovative and useful devices ...'

Apple has specifically mentioned plans for its CD-ROM desktop Macintosh systems in two versions, one for the consumer channels, and one for

Outback kids learn with Remote

TIMBUKTU/REMOTE, the screen sharing application from Farallon Computing distributed in Australia by NetComm, is being used in the outback as part of an innovative remote education system.

Carnarvon 'School on the Air' in WA, recently installed Timbuktu/Remote with NetComm Pocket Rocket modems, to enable its students, most of whom are located many hundreds of kilometres from the school, to take lessons remotely.

The network enables students to complete their work and return it to the school for marking and immediate feedback. Because of the isolated nature of the region, the children used to wait up to a month for their schoolwork to be returned. Now, they are able to have it on the same day.

According to Lindsay Graieg, who has been responsible for implementing the system, its success is having a very positive effect upon the quality of the children's work. Children who formerly used the WA correspondence school are applying to join Carnarvon, because of the benefits of the computerised system.

'We have nine year olds using the Timbuktu/Remote interface without any problem,' said Graieg. 'It's quite simple for them to access their files and retrieve their schoolwork. They send us five days worth of lessons at a time. We have the students collect their work on the same day with comments as to improvements and encouragement for the fine work they are doing.'

'If they do have problems, we are able to go in and do remote support, because Timbuktu/Remote enables one user to observe and manipulate data on the other party's screen. This makes for a very simple way of instructing and monitoring use of the system.'

The children are using the computers for interactive lessons in language, spelling, and creative writing, as well as instruction in handwriting. 'There are a few children of an even younger age who are using the system, but generally we only install systems in families that have children in year four or above. Currently we have 20 such families,' said Graieg. Graieg, a primary school teacher, has written his own HyperCard stacks, which enables completion of WA Distance Education Centre language material.

'There is a wealth of educational material for Macintosh users,' said Graieg. 'It is possible to obtain hundreds of megabytes of HyperCard stacks on CD-ROM that have been written by schoolteachers. Many teachers like myself, who have little or no formal training in computers, are now able to write extremely valuable education material and to implement and manage our own networks because of products like HyperCard and Timbuktu/Remote. The school saved up for some time to buy these computers,' he added. 'We had special collections of money and fund raisings. We purchased 18 Macintosh Classics with hard drives, 10 NetComm Pocket Rocket modems, and Timbuktu/Remote version 2.'

the traditional personal computer market. Both products would use Apple's QuickTime multimedia technology, an extension to the recent introduction of the new System 7 operating system, which allows the inclusion of video, animation and audio.

Sculley strongly believes Apple can be very successful in the consumer market. 'Introducing high-volume products into consumer channels will be important in creating critical mass presence for Apple as a consumer channel vendor,' he said, adding, 'We will be adjusting our service and support offerings to be appropriate for the consumer channel.'

Sculley also asserted Apple's reputation, channels, and name recognition would be valuable in a consumer market. 'We are confident in our ability to continue to create highly differentiated personal computer systems which will make these strategic moves into consumer channels also

be in the long-term interest of our traditional resellers,' he said.

'There is a long history of entry-level Macintosh owners trading up over time to more sophisticated Macintosh systems, so reaching out to more new users should have a strong, positive effect,' he added.

Some consumer-oriented devices may use the already-available television as a display terminal. Commodore is already selling CDTV, and *Infoworld* reported Tandy is planning a CD-ROM-based system that will work on a user's television set.

Infoworld reported Apple's CD-ROM PDA is being developed in conjunction with Sony and will use a television set as well. However, Apple, when contacted, said it is not releasing specific details about the PDA devices or its alliances in developing PDAs, but only that it is intending to pursue the consumer market. □

Patent for optical computer advance

MARYLAND-BASED Essex Corporation has been awarded a US patent for its ImSyn imaging system, which is based on optical computer advances. The system is based on an unusual analog computer using optical elements which allow processing speeds in excess of one trillion operations per second, far faster than existing digital processing techniques.

Present applications are in CAT (computerised tomographic) image processing, where the company claims that its system is more than 100 times faster than existing devices, and in synthetic aperture radar image analysis which is used for both military reconnaissance and

satellite resource imaging systems. Essex also claims that its invention will have a broad array of applications in other medical and scientific applications, including magnetic resonance imaging, ultrasonic scanning, seismology, and microscopy.

Announcing the patent details, Essex chairman and CEO, Dr Harry Letaw said: 'This patent award represents a major milestone in the Essex effort to bring optically assisted computing technology to the marketplace. The applications for this technology are extremely broad. We plan to develop certain applications and license others.' □

And the winners . . .

IN SEPTEMBER, October and November we offered ten subscribers during those months the chance at a share in \$7500 worth of games from Mindscape International. The ten winners, who each received eight games worth about \$750, were R. Turner of Coober Pedy SA, J. Halford of Dorrington Qld, A. Potocnik of Doncaster East Vic, L. Parker of Abbotsford NSW, A. Arnall of The Gap Qld, M. Colli of Glenhaven NSW, Mr Spragg of East Killara NSW, H. Porter of Lane Cove NSW, Mr Rix of Hargraves NSW and G. Hill of Perth. Congratulations and many hours of enjoyment to you all!

Toshiba publishes survey findings

TOSHIBA, WHICH holds around two-thirds of the portable PC marketplace in the UK, has just released details of a survey among portable PC users there. The results make for some interesting reading. According to the survey, two-thirds of sales professionals are less effective than they could be, because they do not take advantage of modern technology.

The survey, undertaken by Toshiba in conjunction with *Sales and Marketing Management* magazine, found that 80 per cent of sales professionals believed they would be more productive and provide a better service if they could work on their company's latest software and data while out of the office. Of the remainder of the sample, 12.5 per cent were not sure what advantages would be gained, while a mere 7.5 per cent judged there would be no gain in their particular working program.

Interestingly, when the sales professionals were questioned as to their work patterns, only a third of those surveyed say they used, or had access to, a portable PC.

The poll drew responses from the financial, industrial and service sectors, and from

organisations employing from 1 to 220,000 people throughout the UK. According to the survey, it is clear that the office PC is widely used by organisations of all sizes in the sales industry, with only 4.4 per cent of offices saying they had no computers at all. In the office, over 80 per cent of managers and directors polled are hands-on computer users, with word processing (81 per cent), spreadsheet (61 per cent), accounting (48 per cent) and sales management (44 per cent) applications being the most widely used software.

While most people felt that a portable PC gave them advantages in having information on the spot, there were mixed feelings about the benefits of a portable printer. Forty-one per cent said they would find it useful to produce print-outs on the spot, with 47 per cent judging the facility only 'moderately useful'.

Despite the relatively low standard of PC usage among current computer users, the situation could change in the near future. Three quarters of the respondents to the survey said that their companies are planning to make a major hardware purchase over the next 12 months. □

Radius/NEC team up

RADIUS AND NEC Technologies have announced an agreement under which Radius will supply NEC with video interface products optimised specifically for NEC's new Multisync FG monitors.

Jim Schwabe, vice-president of NEC's Graphics Business Unit, said: 'Radius' expertise in display interface hardware and software, combined with our own leadership in graphics monitors, promises to substantially increase awareness of NEC in the Macintosh market.' Schwabe said the Multisync FG monitors are oriented specifically for the Macintosh.

Radius President and Chief Executive Officer Barry James Folsom, said the agreement with NEC is: '... a major win for our distribution strategy. We are delighted to have been selected as a key supplier ...'

NEC Technologies is an affiliate of NEC Corporation, a manufacturer of computers, semiconductors and home entertainment products. □

Intel reveals '586

INTEL HAS released a few more tidbits about the coming 80586 microprocessor chip, the awaited CPU addition to the IBM and compatible family of personal computers. A newsletter sent to Intel corporate customers reported, the chip is known internally at Intel as the P5. The new chip is to combine the virtues of reduced instruction-set computing (RISC) architecture and complex instruction-set computing (CISC).

The new chip is to be a lot more integrated as well. While the '486 chip has 1.2 million transistors, the P5 contains over 3 million, Nancy Pressel of Intel said. Processing power of the P5 is estimated to be 100 million-instructions-per-second (MIPS) — for comparison, a 33MHz '386DX runs at about 4.5 MIPS and a 12MHz AT clocks about 2.5 MIPS.

Intel says it also plans to provide an upgrade path to customers, so at some point after the P5 is released, the company will offer a bridge from the '486 to the P5. What that bridge is exactly or what it will cost is still known only to Intel. A release date for the P5 is still uncertain, but Pressel did tell Newsbytes to expect the chip in 1992. Whether in the first or second half of '92 is still speculative.

Another fairly new technology is called flash memory. It is a replacement of the ROM chips that store the basic input/output system (BIOS) information.

The BIOS is what determines, at least in part, the type and number of hard and floppy disk drives the computer can support as well as other system information. A new type of hard disk drive or a higher capacity floppy disk drive may require a BIOS upgrade to operate in the system. Upgrading the BIOS is risky at best, as it involves the removal of the ROM chips from the motherboard.

With flash memory, the user can upgrade the BIOS from a floppy diskette. Intel is encouraging other system manufacturers to consider flash memory over ROM chips. Advantages include the fact that systems can be customised on the assembly-line and the flash memory chips can be soldered in place for better reliability.

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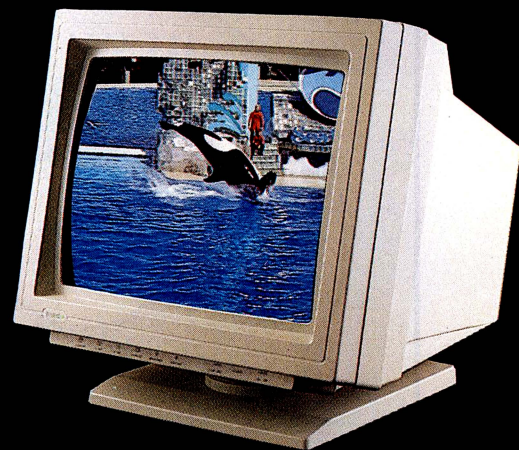
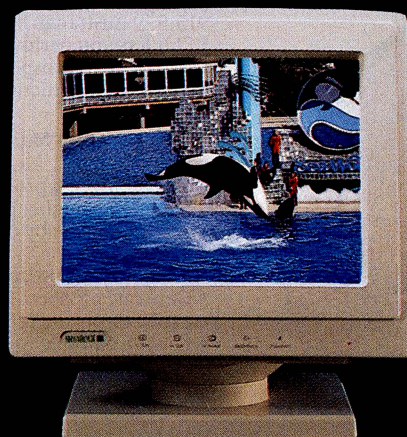
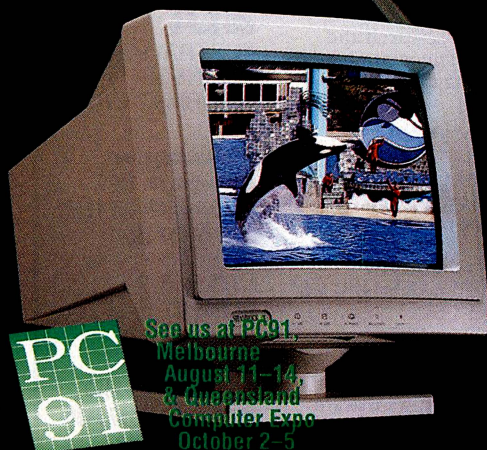
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Software college to open

THE RAYWOOD International Computing College is to admit its first students in February. The college, a non-profit venture formed by interests from participating countries, has set up its campus in the picturesque Arbury Park, with sweeping gardens and stately buildings, in the Adelaide suburb of Adelaide Hills.

The college is based on an idea by Glynda Patton, managing director of Computel Computing Services (an Adelaide-based software company) and chairwoman of South Australia's Software Export Centre. The college will offer courses to students from Australia, Korea, Japan, Indonesia and the Netherlands.

Students would complete the six month course, then be offered a one or two-year contract with one of the participating companies. Approximately 40 per cent of the students would be Australian, allowing them to offer valuable experience to the Australian industry when they return from their contract.

Fees for students would be figured on an individual basis, taking into account the student's position and that of their country. Australian enrolments would open in February, with students from the other participating countries being admitted from August. Initially, the course would be aimed at Australians with experience in the computing industry, but Patton hopes to offer the course to school-leavers once the college is well established.

IBM/Apple deal approved

THE FEDERAL Trade Commission is looking favourably on the proposed IBM/Apple joint venture arrangement, according to published reports.

The significance of the FTC's non-action on possible anti-trust grounds, may be that the Federal Agency sees the IBM/Apple Taligent joint venture producing a major new operating system as a potential counterbalance to the dominance of Bill Gates' Microsoft, which holds a dominant, some say domineering, position in the world of PCs.

The FTC has yet to respond directly to Newsbytes' requests for comments on the two proposed IBM and Apple deals (the other is a multimedia project named Kaleida), but this isn't unusual because the FTC routinely refuses to comment on any possible anti-trust review until an official announcement is made.

An Apple spokeswoman has told the Dow Jones News Service, 'We can proceed with our plans,' indicating that the FTC has completed its review of the proposed joint venture. □

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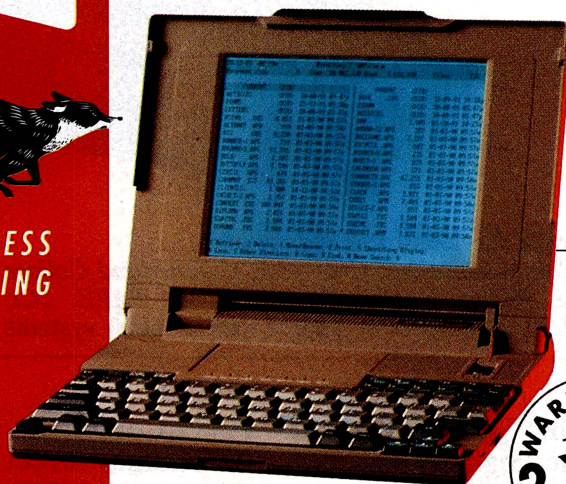
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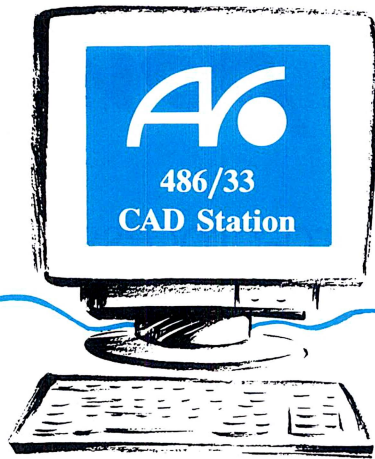
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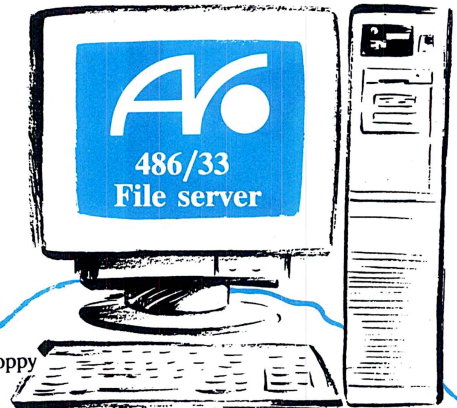
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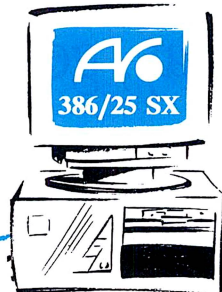
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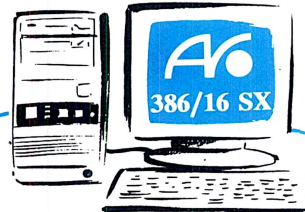
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80386 25Mhz
2MB RAM
1.2MB on 1.4MB Floppy
80MB Hard Disk
512KB VGA Card
NEC Multisync Monitor



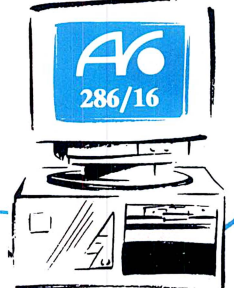
\$1,850

80386 16Mhz
2MB RAM
1.2MB or 1.4MB Floppy
80MB Hard Disk
512KB VGA Card
NEC Multisync Monitor

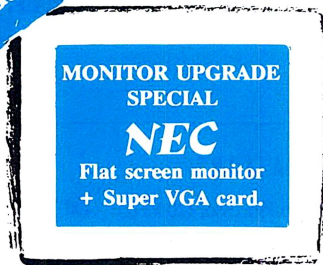


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TECH TIPS



If you have a PC problem that's been bugging you, put the details on paper and send them to us, and we'll try to help. On the other hand, if you have any technical advice or hints on using hardware or software that might interest others, drop us a line and we'll pass them on. The best Tech Tip published each month will earn the author a \$100 voucher, redeemable at any Rod Irving Electronics or Software Express store, or by mail order from either company. Send your letters to Tech Tips, *Your Computer*, PO Box 199, Alexandria 2015 NSW, or fax them to (02) 693 9720.

**Edited by
Mark Cheeseman**

If you wrote a letter to 'Tech Tips' last year, and haven't yet received a reply, or seen one published in the magazine, don't despair. Your letter could be one of many which archaeologists recently discovered in a dark corner of my office. I will try to cover as many of these letters as possible over the next couple of months, as well as the more recent ones which are arriving all the time.

While on the subject, now is probably a good time to make a small request regarding letters. Please try to include as much relevant information as possible when describing your problem, such as the type of machine (processor, BIOS, memory configuration) which you are using, any periph-

eral cards in the machine, DOS version you are running, and so on. If you're not sure whether something is relevant or not, include it anyway. It's easier to ignore irrelevant details than to try and guess at something that's been omitted.

We don't claim to be able to solve every problem, but we'll certainly give it our best shot. If somebody in the office doesn't know the answer, we will attempt to find out for you, or point you in the right direction to find out yourself. We generally can't reply to queries personally, and it often takes several months between when you send off the letter, and when it appears in print, so don't expect an instant response.

Lost hard disk

I hope that you can help me with my problem – it is my worst to date, and I hope, my last. I have an IBM compatible '386 CPU running at 25MHz, with 1.2Mb and 1.44Mb floppy drives, a 110Mb hard disk, and 4Mb of memory on board. I have been running DOS 5.0 for about a month or so.

For some reason this morning, on trying to start up the computer, I was given the message: Drive not ready, insert DOS disk. Why this has happened is completely beyond me at this time. I had been using the machine for about three hours the day before.

After putting in the DOS 5.0 disk, I was told that the disk is not bootable. I then tried a DOS 4.01 bootable disk, and I did get an acknowledgment with the Microsoft message, and then the A:> prompt. And that's where it stops – I cannot get to the C: drive at all – I get a message saying 'incorrect drive specification'.

On rebooting the computer, I pressed DEL to enter the setup program, and according to that, there is no C: drive installed. Being relatively new to the computer game, I am at a loss as to what to do now. I have also tried Spinrite, but it can't find the C: drive either. I live about 30 miles from the nearest town, so I am hoping that this doesn't mean a trip into the 'big smoke' to get the problem solved.

Kevin Manning

Fortunately, your problem is not too difficult to solve, if you know the details about your hard drive. I had the same problem myself a couple of months ago, and it was only when I came across the problem that I realised I knew nothing of the important details of my hard disk.

The hard disk parameters are stored in a special RAM chip in the computer (actual-

ly, it's part of the real-time clock chip), which is powered by a small battery when the power is turned off. Sometimes the battery voltage is a little on the low side (especially after a year or two of use), and the memory won't accurately retain the information which has been stored in it, and the computer forgets the time or date, or forgets that it has a hard disk.

The solution is simple if you know the hard disk parameters – simply enter the setup program (using the DEL key, as you did before), and enter the drive parameters. There are usually 40 or so sets of pre-defined drive types, and if one of these types matches those for your particular drive, simply set the drive type to that drive type. The type numbers and their matching parameters should be listed in your manual, or if not, you can scroll through them on-screen in the setup program.

If there isn't a matching set of drive parameters, then your machine was probably using a 'user-definable' drive type, which most late-model machines have. In this case, you set the drive type to the user-definable setting, usually type 46 or 47, and then manually enter the individual parameters. These are the number of heads, the number of tracks, the number of sectors per track, write-precompensation, and landing zone. You don't need to know the meanings of all of these parameters, only match them to those of your particular drive.

Once you have done this, save the settings using the keys specified in the setup program, and the system will reboot. The hard disk will still have exactly the same data on it as before the computer lost the drive, so you won't need to re-format it.

Incidentally, the reason your DOS 5.0 disk wouldn't boot the machine is probably because it was an upgrade disk, which is non-bootable. Nobody really knows why Microsoft released two variants of DOS 5.0, but it has caused more than its fair share of trouble. Once your machine is back up and running, use the 'sys' command, as described in the manual, to make a floppy disk bootable, and keep this in a safe place, just in case you ever need it.

Colour printing

I have a problem which I hope you can help me with. About six months ago, I purchased a new Citizen 200GX colour printer. While I have found it an excellent asset, and a very

Software Express/Rod Irving Electronics Tech Tip of the Month

Remote install in LapLink III

I run a small computer consultancy and service business, where sometimes the odd or unusual problem arises. So far I have managed to solve them all (touch wood). The most common problem seems to be users playing with their autoexec.bat or config.sys files and ending up at the C: prompt wondering what to do next. Anyway, the reason for this letter is a problem that might be of interest to you.

The problem involved an Epson PCE XT, in which the floppy disk controller went into retirement, and, being part of the motherboard, that meant quite an expensive replacement. As the owner was buying a new computer, this would solve the problem. Ha! On the XT was all his program files for his business, hundreds of data files, plus numerous other files, except something like ll.exe or ll3.exe. Not having a modem program ruled out transferring through modems, which would have been one way.

I diverge here to mention that backing up was not a regular practice with this customer, but certainly is now. The next alternative was LapLink III, which as you know is supposed to transfer the ll3.exe to a computer that doesn't have it on its disk already. As I said, it is *supposed* to. Following the instructions explicitly (and not so explicitly), no matter what I did, no file transfer took place. Many phone calls later I was still no better off, and wondering how some experts get to be called experts.

I then hit upon the idea to maybe create a batch file to push the file over (if push is the right word). Lo and behold one ll3.exe file transferred – the relief was overwhelming.

All I did was make a batch file containing the commands that are supposed to be typed on the computer that is to receive the ll3.exe file, and copy the file to com1.

```
rem GO.BAT
mode com1:2400,n8,1,p
ctty com1
```

I Hope this information may be of some use to somebody in some way. Keep up the good work with *Your Computer* – I can honestly say I read it from cover to cover. It is not only interesting, but informative and comprehensive. Well done!

Kevin J. Kershaw

We use LapLink quite frequently here in the Your Computer offices, for transferring our benchmarks and favourite applications over to test machines, and have often encountered the same problem with the auto-install facility. I must admit that using a batch file never occurred to us, but we'll remember it in the future.

By the way, I assume you meant 'run the batch file' in the second-last paragraph, not copying it to the COM port. And thanks for sending the tip in on disk – it certainly made my job that little bit easier.

worthwhile purchase, I have had trouble locating a word processor which is capable of taking advantage of its colour printing.

I would like a program which can select different colours, in the same way as I can select underling. I find it very frustrating to have a colour printer, when to use it as a colour text printer, it must be reset after each line to start a new colour.

Andrew Watts

Although there are a large number of printers on the market, most either emulate, or can be made to emulate, one of the more common makes and models. For example, virtually all laser printers emulate one of the HP LaserJet models – even the new Apple LaserWriters do it. With impact dot-matrix printers, the Epson

models are the most commonly emulated.

Nine-pin printers usually emulate the LX-80, or one of the similar models which that company has produced. 24-pin printers are usually compatible with the Epson LQ series. See if your word processor has a driver for one of these printers, and select that as the driver. If there are several drivers, try them all, and see which one works best. When doing this, it is a good idea to switch the printer off and on again between drivers, to ensure that the printer is starting from the same point each time.

However, if the word processor doesn't have any in-built support for colour printing, then you are going to have to define your own printer control strings. Most word processors have the ability of defin-

ing 'custom print controls' which give you access to facilities specific to particular printers, which aren't built into the program itself.

Unfortunately, every word processor is different, and you really need to sit down with the manual to figure out how to define and use these custom print controls, and then consult the printer manual to see what codes need to be sent to the printer to enable its special functions. For example, in WordStar, this is accomplished from the wschange program.

Not many word processors have in-built support for colour, although many Windows packages are supporting it. Microsoft Word for Windows, and Ami Pro, both have support for colour text, and provided you have a colour printer driver that works with your printer, you should have no trouble.

Easing the RAM cram

I have an Amstrad PC1286 with 1Mb of RAM. When a program called World Atlas wouldn't run properly, I was informed that the reason had to do with the way that DOS 4.01 apportioned the memory. To run the program fully, I was told I needed an earlier version of DOS that used up less RAM.

Another program – Publish It Lite, when loaded, leaves only 44Kb spare. Since two images on a page (in this program) can use 30Kb, then it doesn't take long to run out of memory.

Why is it, that with 1Mb of RAM, the memory is running out, with programs that need 640Kb or less. Can it all be blamed on DOS 4.01, or is there some other reason?

J. Delamoire

The ultimate culprit for the 640Kb RAM limit which we're all burdened with at the moment is short-sightedness on the part of the designers of the PC's original processor chip – the 8088. This chip was designed really as a souped-up 8080, an old 8-bit processor, with a memory limit of 64Kb. The designers added segment registers and a few other bits, and blew the memory addressing capacity of the chip out to 1Mb.

This decision (plus the decisions of IBM to use it in their PC, and of Microsoft to base their operating system on it), have left us with two legacies. The first is the segmented memory structure, which is a pig for programmers to work with, as the memory is still addressed in 64Kb blocks. While this segment limit is invisible to end-users, it wastes programmers' time

which could be better put toward other things.

The other problem is that it left no way open to expand to bigger memory systems in the future. The 80286 can address up to 16Mb of RAM, but in order to do so, it has to be switched into its so-called 'protected mode', which is incompatible with DOS programs. So this extra memory is only usable for storing data, not as program memory.

So, while 640Kb of RAM seemed like a lot at the time the PC came out (the rest of the 1Mb addressing range of the chip is taken up by system ROM, video adapters, and other peripherals), software quickly grew to fill the space available. As DOS also grew in functionality (and size), programs which would fit comfortably in memory with previous versions of DOS, suddenly started getting squeezed for space.

Then, along came DOS 5.0, which reversed the trend by using a little-used bit of memory that '286 and '386 chips can utilise, while still being compatible with DOS programs. So, with DOS 5.0, there is actually *more* conventional memory available to programs than any previous time in DOS' history – over 600Kb in some cases.

So instead of going back to an older version of DOS, I'd suggest upgrading to DOS 5.0, and gaining use of at least part of that extra 384Kb of RAM that you have. And you can still use the rest of your extended memory for other things, like a disk cache or a small RAM disk.

Starting a BBS

For the past 18 months, I have been a regular member of the various bulletin boards that are located in my local area (the NSW Central Coast). Having used the BBS' available, I am now interested in beginning my own BBS. It would be appreciated if you could recommend any books or literature that is available on beginning bulletin boards. I am particularly interested in discussions on programming, file compression, doorways (for on-line games), and user groups.

Keith Billington

Since you are already active on a number of your local boards, the best place to start is probably by asking some of the local sysops what they'd recommend. Sysops tend to have their own favourite BBS software (the package they use on their own system, of course), but most will be honest enough to tell you how easy it

will be to get up and running.

In addition, if you use the same software that other local people are using, then you have a ready pool of knowledge to draw on when the inevitable questions arise during the setting-up stages, or if you want to change your configuration later on. Sysops generally don't mind helping you in this way, since once you become familiar with the software, they might be able to call on your help one day.

The financial aspects of running a bulletin board should not be overlooked either. Aside from the initial capital costs of the equipment required, there are the on-going costs of a dedicated phone line, and the occasional unforeseen disaster (hard disk failure is a common killer of BBS operations).

Many sysops charge membership dues to try and cover these costs, but rarely do they come anywhere near covering the running costs of the BBS. But, if you're prepared to invest the time and money, it can be a rewarding (if not frustrating) pastime.

Graphic file formats

In your November 1991 issue, you ran a piece entitled 'Standard forms with Ventura'. My attention was caught by the words '... saved each graph as a pic file ...'. My question is: what is a pic file? Is it just another name for a Mac file for PCs? Is there a standard pic file format?

I ask this because I recently came across a pic file and was unable to view it. I purchased a book called Bit-mapped Graphics by Steve Rimmer, and although it explained what Mac, gif and pcx files are, it did not have any information on pic files, and how one would go about decoding or unpacking the picture. I have tried to read the header using graphic conversion programs, but to no avail.

I believe that this particular file was created by a package called IBM Storyboard. If you could give me any information on this file format, or point me towards a reference book, I would be most grateful.

Patrick Clift

The number of graphic file formats seems to be without end, and while a few formats are establishing themselves as standards (GIF, TIFF, and PCX, seem to be the most common on PCs), the situation is not helped when several different file formats use the same name and file extension.

I can think of four programs which use pic files, and all have their own file format.

Lotus uses the pic extension to save graphics files for printing with its Print-Graph utility. Mouse Systems has (or at least, had) a program called PC Paint, which used its own pic format, as does IBM's Storyboard. And then there's the Mac's pic file format, which is different again.

Ventura can read the PC Paint format pic file, which is what the article you mention was referring to. However, I think the only program which can read Storyboard's pic format is Storyboard. Even its pcx file format seems to be different to everybody else's. The only thing I can suggest is to get a copy of Storyboard, load the file, and then save it in some other format that something else can read, such as GIF.

BIOS drive support

I have recently purchased a '386 motherboard with an old Phoenix BIOS on it. The problem is that it does not have support for my hard disk in the CMOS setup, and there is no user-definable hard disk setup. What do I do? After spending half a day ringing around, I have been told that I can't just get the BIOS. Would anyone at Your Computer know from where I might be able to purchase an updated BIOS for my '386 machine?

Mark Seifein

I am not aware of anybody currently selling updated BIOSes in Australia, but there is a company in the United States who does. They are called 'Upgrades Etc.' and their address is 15251 NE 90th Street, Redmond, Washington, 98052, and their fax number is +1 206 881 8294. The only phone number I have for them is a US 800 number, which is not diallable from Australia.

This company sells licensed BIOSes from Phoenix, Award, and AMI, for a wide range of motherboards, at prices ranging from US\$60 to US\$80. I asked this company if they had an Australian distributor, but they don't (at the moment).

If you have an EPROM programmer, or ready access to one, it is possible to alter the built-in drive table, changing one of the existing drive types to match your own drive. The location and format of the drive table is pretty easy to find out in most BIOSes, but there's not really the space to go into it here. The only possible problem with this approach is that the timing of early AMI BIOSes was not compatible with some IDE drives, but since you've got a Phoenix, this shouldn't be a problem.

Printing graphics characters

In your November issue was an article entitled 'Teach your printer to fly', and there, I thought, was going to be my hope and salvation, as far as printers are concerned. Most of the material I had read and heard of in fragments from here, there, and everywhere, but not in such a collated and concise form.

So I had another go at printer controls, but alas, the result is still 'no go', and I don't understand why. I have an Epson RX-100 printer, and try as I might, the ASCII character set from 127 to 255 eludes printing. Sure, I can get the characters on the screen, but not printing.

The system is an IBM-alike, running at 4.77MHz, with a 30Mb hard disk. The autoexec.bat file contains the ansi.sys driver, also.

Frank Damen

First of all, I must point out that the characters above 127 decimal are not strictly ASCII. The ASCII character set only defines those characters which can be represented by a seven-bit binary number – that is, those from 0 to 127. Many computer manufacturers, since their machines deal with information in multiples of eight bits, extended the character set to 256 characters, and of course, IBM's extended character set has become the standard 'extended-ASCII' character set, but is by no means the only one in existence.

While this distinction might appear to be merely one of semantics, it does explain why some printers do not support the extended IBM character set, either by ignoring the eighth data bit entirely, or by printing a completely different character set. Most late model printers *do* support the IBM character set, although in many cases, you have to set an internal DIP switch to enable this feature.

I'm not familiar with the particular Epson model of which you speak, but if you refer to the section in the manual which deals with DIP switch settings, you will see if there is any switch to allow you to enable this feature. If so, turn it on – it shouldn't affect printer operation in any way, except to allow printing of the extended characters when called upon to do so.

Failing that, there is really nothing that you can do. I have an old Epson LX-80 which doesn't support the extended

character set, so you're not alone. By the way, ansi.sys has no effect on the printer – it is an enhanced screen and keyboard driver. Also, it should be in config.sys as a 'device=' statement, not in autoexec.bat.

Enhancing DTP printing

I am writing to you for some information concerning a statement made in the article 'Printing for DTP' in your March 1991 issue. The statement is made that a package such as Publish It! running on an XT out-putting to a good dot-matrix printer with print enhancement software will give satisfactory results.

I have an Amstrad 2086, and an Epson LQ500 running Publish It! I live in the country, in an area poorly supplied with literature computer suppliers, which forces me to have to shop by mail or phone. Whereas in

the city you can make 10 phone calls for \$3, I can spend that much just listening to music on hold.

Could you recommend a print enhancement package that would suit someone like me?

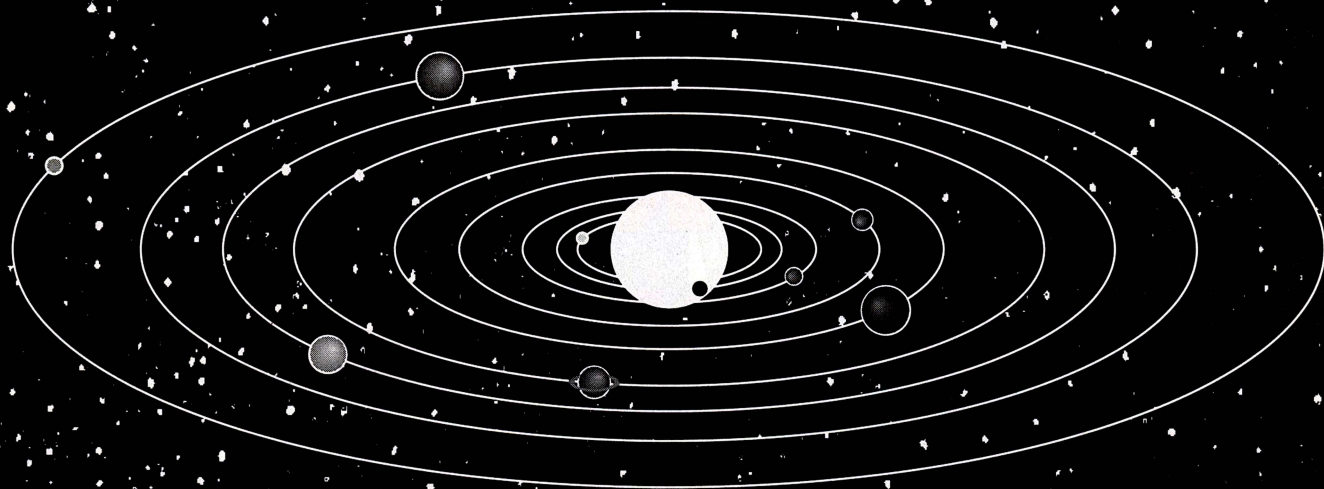
Mervyn Passmore

One popular DTP print enhancer is Publishers' Powerpack, which gives scalable fonts to users of non-PostScript printers. I don't know how well it works with Publish It!, but the distributors, Trio Technology ((03) 585 0566) should be able to tell you without keeping you on the phone for too long.

Another possibility is a program called GoScript, which takes a PostScript file that has been printed to disk, and converts it to a bit map, for printing on printers such as the LQ series. This will work with any program that can print a PostScript file to disk. It's also distributed by Trio. □



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10th PERSONAL COMPUTER OF THE YEAR

**Some last minute releases
threw the well-organised judging
into confusion, giving us a surprise
and an obvious choice for the Awards.**

Jake Kennedy reports -

FEATURE: THE WINNERS!

TEN YEARS AGO we announced the first Finalists for Computer of the Year. The contenders included the original IBM PC, the Columbia MPC (one of the first clones), and NEC's Advanced Personal Computer, the APC, remarkable for its graphics resolution of 640 x 475 lines, only five less than the current VGA standard of 640 x 480.

It's germane that ten years on, two of those companies have again produced Finalists. While IBM's PS/I, with DOS in ROM shows innovation, it is significant for two reasons: the price pressure it has put

on the clone makers and it is IBM's first explicit admission that there is a world outside the corporate one.

Yes, you're right – there wasn't a Columbia or an NEC mentioned last month. Columbia has long since gone by the by, but NEC is still well and truly with us, as demonstrated by the launch of a new range of systems in Sydney this month. One of that range is so impressive we chose it as the tenth Computer of the Year – the UltraLite SL/25C notebook. It is the first notebook we would cheerfully run Windows on.

The active matrix colour VGA display is crisp, fast and sharp – the days of image ghosting and pointer submarining are drawing to a close. But it's noteworthy for another reason: NEC is getting on the order of 50 per cent yield in manufacturing colour LCD screens (others are pleased to get 5 per cent: after all, there are some *two million* transistors behind those colours). What that means to the end-user is that for the first time a colour portable has hit the Australian market under \$10,000, just under \$9000 in fact.

While that's still several thousand dol-

lars more than the equivalent monochrome machine, it's a pleasing pointer to what we can expect, not only from NEC, but from other notebook purveyors. (Speaking of the future and NEC, see my editorial, 'One Man and His Vision' this month for more pointers.)

The UltraLite uses the power-managing 80386SL chip, a breakthrough in its own right – the chip is the first with the ability to slow itself down, saving on power-consuming clock cycles. It's coupled with 2Mb of RAM and an 80Mb hard disk in a package weighing just over 3kg.

Until we saw the UltraLite in mid-February, we had narrowed the Finalists down to two: Ergo's elegant Moby Brick, an innovative, modular '486 system and Compaq's 486c portable, described last month as the 'first truly usable colour portable' with a hold-out for NCR's 3125 Pen Computer (which the gremlins last month attributed to NEC). The Apple PowerBook, Archmont's Carry-1 and the PS/1 had been eliminated earlier after strict application of 'The rules' – see the sidebar.

One of that range was so impressive we chose it as the tenth Computer of the Year Winner.

We believe the UltraLite is the first of a new generation of battery-powered notebooks, a generation that can only broaden the every day application and usefulness of computers. Like many other computer products, notebooks have been caught in the classic Catch-22: the price is too high, so the market is small; because production runs are small, the price is high ... and so, as Vonnegut said, it goes.

Whether it be hardware or software, though, it takes only one company to break the price barrier (and raise the feature stakes) to a level that the market – *you* – think is 'acceptable' and suddenly the class blossoms.

That, we feel is what NEC have done with the UltraLite colour notebook. It her-

alds an all-colour notebook class, with features undreamed of in a battery-powered computer only twelve months ago. To the team at NEC: well done!

Software Product of the Year

IT TOOK 100 years to manufacture the first piece of computing hardware (the 'marketing' department came up with an application it thought would sell, but didn't take into account the current state of manufacturing technology), but at last the Babbage Differential Engine is a working reality. On a more compressed scale, that's the cycle that hardware and software development has generally followed at the end-user level. Users push hardware technology to the limit with ever-more powerful uses, then suitable hardware hits the market, and users push *that* to its limits.

*We believe
NEC's UltraLite
is the first of
a new generation of
battery-powered
notebooks.*

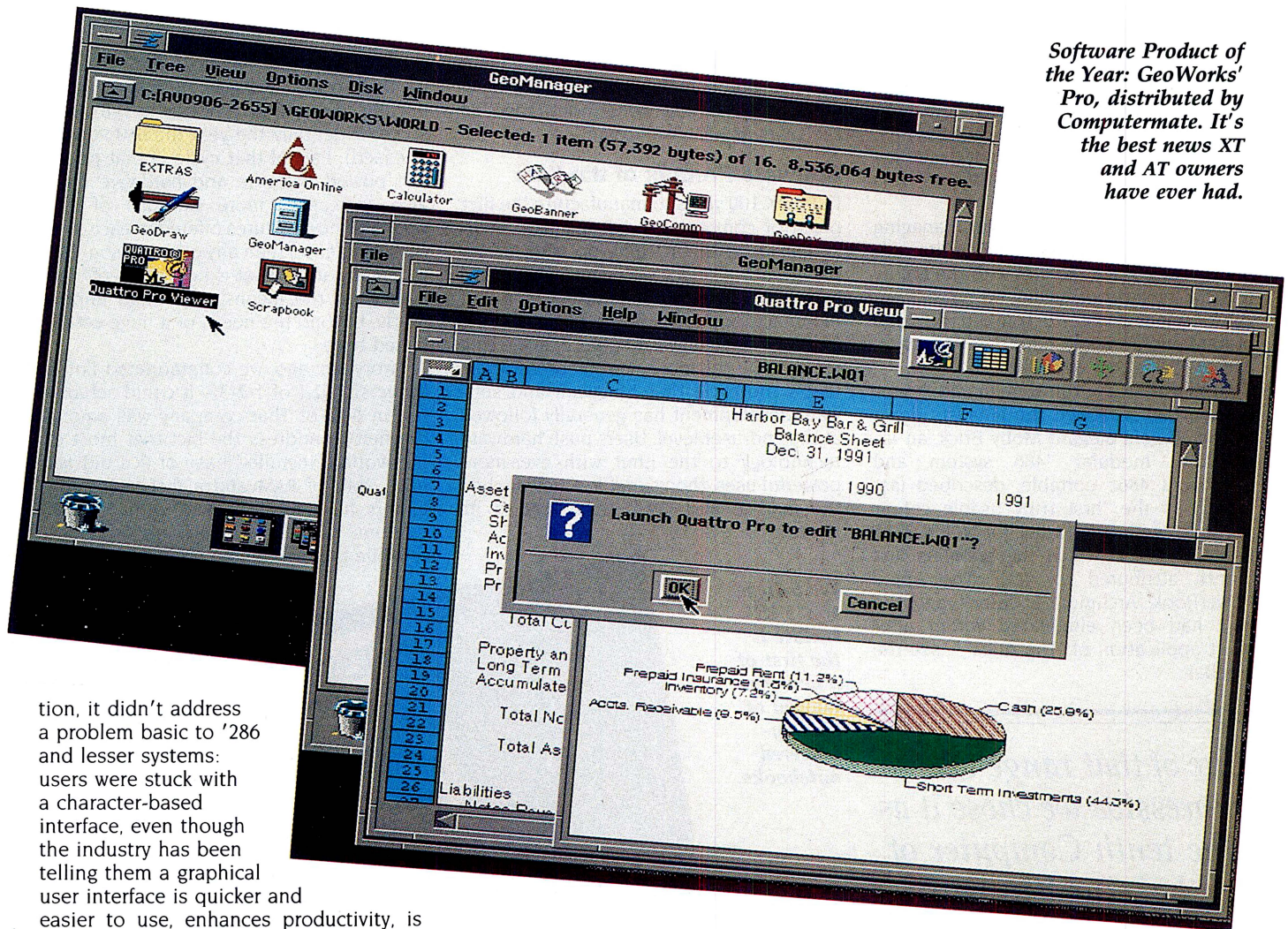
It's a cycle that has seen the power of personal computers grow almost logarithmically since our first awards in 1981 (not so coincidentally the year the IBM PC was released). Part of that cycle is that prices for 'power' software and hardware have also increased, more because of the wealth of new features offered in each successive release, than any other reason. But – in many areas what is now being offered is beyond the means, and more importantly, beyond the needs of a huge established base.

Two years ago, we congratulated Lotus for version 2.1 of 1-2-3 – it could actually run in 640Kb! That company was among the first to address the fact that most of the world's installed base of PCs did *not* have 2Mb of RAM and a fast processor. Others have followed suit with 'special editions' of their own software.

While that was a step in the right direc-



Software Product of the Year: GeoWorks' Pro, distributed by Computermate. It's the best news XT and AT owners have ever had.



tion, it didn't address a problem basic to '286 and lesser systems: users were stuck with a character-based interface, even though the industry has been telling them a graphical user interface is quicker and easier to use, enhances productivity, is easier on the eyes, is prettier, increases employee satisfaction and so on, ever since the release of 1984's Computer of the Year, the Apple Lisa.

It took several more years before IBMers had the chance to go GUI with the first release of Windows, but no one *really* got excited about it. As the excitement grew with successive releases, so did the required power: 4Mb of RAM, a '386SX processor and a 100Mb hard disk became the entry-level.

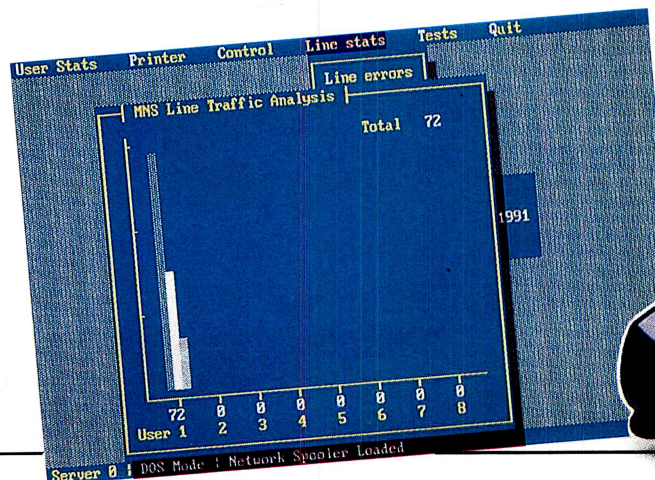
Enter 1991's Software Product of the Year: GeoWorks Pro. Until now, GeoWorks was best known for GEOS (graphical environment operating system) for the Commodore C64 and -128. The company used the skill gained in programming for

systems with only 64Kb – an exercise DOS programmers should try! – to develop GeoWorks Ensemble (which runs happily in 512Kb).

Since its release in the US about two years ago, it has made its way onto the hard disks of well over a million users with XT and AT systems, and OEMs are shipping it with portables and notebooks overseas.

Since we nominated Ensemble in February, a new release has come out: GeoWorks Pro, which has added network support and the Special Edition of Quattro Pro to the package (and still runs in 512Kb). The inclusion of Borland's spreadsheet smoothly rounded out

Ensemble's set of applications. Pro now has a WYSIWYG word processor (colour PostScript printers are supported), a draw-



Australian Software Commendation winner: Murrumbidgee Network System from Program Development Systems (left); Australian Hardware Commendation winner: Multicoins' Star Cursor.

ing package, a file and disk manager, a flat file database, a time planner, a communications package and Quattro.

These facilities have more depth to them than their Windows' equivalents and many small business users will find that they won't need any other software except MS- or DR-DOS.

Late last year I had lunch with Dennis Rowland of GeoWorks. When it was suggested to him that, perhaps, the company had missed the window for a product such as GeoWorks – which was specifically designed around the 8086/88 chips – his reply made me realise how blinkered a view we can have. Rowland pointed out that the 8086 is Intel's most widely used chip – it's finding its way into almost every imaginable electric 'appliance' from washing machines to building security systems. Breaching this broader market is the aim of GeoWorks. (Just think: in the future your microwave and PC will be compatible!)

To GeoWorks and Australian distributor Computermate: congratulations. And – from half of the world's installed base of compatibles: thank you.

*It took several more years
before IBM had the
chance to go GUI.*

Australian Commendations

EACH YEAR WE award our local industry with recognition through our Australian Hardware and Software Commendations. As noted last month, most Australian companies don't have the huge resources of the large multinationals, but the products many of them are producing are still world class. Companies such as communications specialist NetComm, virus-buster Leprechaun, memory board developer Hypertec, typing tutor supplier TypeQuick, Unix hardware specialist Stallion Technologies – but few others – have become multinationals themselves with 'home grown' products.

Without exception, they will tell you that having 'Made in Australia' on the packaging doesn't help to sell products overseas. The only things that count are price and quality. In fact, because of the formidable set-up costs needed to establish a marketing network in the UK, western Europe or the US to compete with their

home grown, the quality of our products often needs to better that of the domestics.

To encourage that quality we offer our Commendations. In doing so, we also hope to encourage the many unsung heroes of our local industry: individuals like Dennis Redman (of DR Research), Neville Franks (Soft As It Gets), Claude Almer (Calmer Software), and Steve Goschnick (Solid Software); and companies like Attache, BIZtel and Terran Computers.

Technical excellence in design and engineering, including quality, reliability, 'feel', and features.

Innovation – is the product genuinely new and conceptually different? Is it characterised by features never-before available?

Ergonomics in terms of both hardware and software design – is it easy and comfortable to use; is the design logical and intuitive?

Value – are the features and functions

worth the asking price (in the context of current market prices)?

Presentation: How does the product look? Does the documentation and packaging show professionalism? Is the documentation suitable for novice computer users as well as those with experience?

Market acceptance and placement – What do users think of the product? How well has it been accepted? Does it address a broad range of user needs effectively? Has it created a niche of its own? How does it compare with other products addressing the same market?

However, we do not feel constrained to consider only those criteria. With the dynamic growth the computer industry has shown over the years, and the almost geometric development of the associated technology, a product that breaks all of the rules could be released at any time and be precluded by the above criteria – even though it might be totally revolutionary to personal computing.

Your Computer offers our Finalists and Winners as a guide to the immediate future of personal computing. These are the products which, in our view, are setting the pace in the market. The features they offer should be used as a guide in your purchasing decisions.

The rules

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than straight DOS.

The principle of Program Development Systems, Phil Bertolus, is currently at Cebit in Germany seeking to set up distribution there. We certainly wish him every success.

Australian Hardware Commendation:

Multicoins Star Cursor represents the first real design improvement in joysticks since they were invented. Rather than using carbon potentiometers, which wear out, the Star Cursor uses light beams. Two special vanes attached to the 'stick' allow varying amounts of light to hit light-dependent resistors, which the computer then reads as if they were in a conventional joystick. This eliminates almost all of the moving parts in the joystick, and is sure to stand up to the rigours of even the most ardent games enthusiast. Multicoins is no newcomer to making this sort of long-lasting gear, having manufactured controls for video arcade games for a number of years.

The lateral approach Multicoins has used to improve a product we tend to take for granted, is an example others should learn from. Such thinking bodes well for the Australian industry. □



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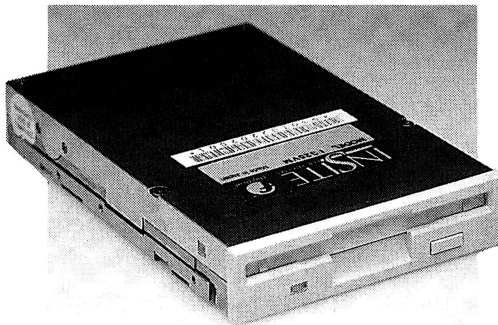
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MASS STORAGE

When you mention removable media, most people think of floppy disks and cartridge tapes. Mark Cheeseman revved up four products which fall somewhere in-between.

I'VE LOOKED AT four very different removable-media drives, offering capacities from 20- to 260Mb of on-line capacity. A 21Mb 'Floptical' drive was the lowest in capacity, but was also the smallest physically – using media the same size as a conventional 3.5-inch floppy disk. The drive is the same size as a standard 3.5-inch floppy drive also.



The Floptical drive is exactly the same size as a standard 3.5-inch drive, and can read and write standard media, as well as the special 21Mb high capacity disks.

The next two drives – the Syquest cartridge drive, and the Iomega Bernoulli box, use 5.25-inch media, and the internal drives have conventional half-height form factors. They also have approximately the same storage capacity (88 and 90Mb, respectively), but that's where the similarity ends.

The big brother of the four was Canon's Magneto-Optical Drive (MOD). This is also a 5.25-inch drive, but unlike all the others in this comparison, only one side of the disk is used at once. This drive stores 260Mb per side, so a single disk has a capacity of over half a gigabyte, but you have to turn the disk over to get at the other side.

All four drives are SCSI devices, which provides a convenient way of daisy-chaining them from a single controller.

At least, that's the theory. During the course of my tests, I found that each of the controllers behaved differently, and would only work with the software drivers supplied with that controller/drive combination. I tried several combinations of different drives on the same controller, including an NEC CD-ROM drive which I also had connected to the same machine.

All of the controllers knew that the other drives were on the SCSI bus, but didn't know how to interface the other drives to DOS to appear as extra drives. So if you're entertaining ideas of running different drives from the same controller, make sure you can get the drivers to make it all work. I ended up with three SCSI cards in my home machine, each with a different read/write or CD-ROM drive attached. The other two drives I attached to my machine at the office – again, each with its own controller.

It's a pity a popular SCSI driver standard hasn't emerged by this time – SCSI is not new, and has been used for many years to connect all sorts of devices to all sorts of computers. Mac users just have to attach another drive to their SCSI port, and perhaps load a driver for the device, and they're in business. Why can't it be this easy on the PC?

Floptical

THIS RATHER oddly-named drive uses conventional magnetic techniques to read and write data on the disk, but the disks have special optical servo tracks, which give the drive very accurate positional information about the disk media, allowing the sort of data densities which were previously associated with hard disks.

The Floptical drive was the only device tested which incorporated some level of

backward compatibility with existing disk media. The drive can reliably read, write, and format existing 720Kb and 1.44Mb floppy disks, so you can use the Floptical drive as your only 3.5-inch floppy drive.

In fact, this is what I did with my machine at work, which only has one 3.5-inch drive mounting bracket. I pulled out the existing high-density drive, and popped in the Floptical. I had to run the BIOS setup program to tell the machine that there was no longer a 3.5-inch drive on the floppy controller, since the Floptical uses its own SCSI controller.

The SCSI controller supplied is manufactured by GrassRoots, and has a special BIOS extension which integrates the Floptical drive very neatly into DOS. The Floptical drive appeared as my B: drive, replacing the drive I had just removed. There is no change to the way the machine works with conventional floppy disks in the Floptical drive – reading, writing and formatting are performed exactly as if the drive was a conventional floppy drive on the standard controller. No drivers need to be loaded in config.sys, since it's all done at the BIOS level.

But, pop one of the special 21Mb Floptical disks into the drive, and all of a sudden, it takes on a completely new persona. It still appears as drive B:, and reading and writing is unchanged, but all of a sudden, there's the capacity that not too long ago could have stored all the data on the average user's hard disk. The only DOS program which won't work with the drive is format, so the drive comes with a special formatting utility.

Actually, the format program has been split into two parts – low-level and high-level, as DOS does for hard disks, in order to speed up the formatting process of the large disks. Once the disks are formatted with the special utility, DOS recognises the disks as 21Mb floppy volumes.

One of the nice features of the Floptical drive and GrassRoots controller (sounds like a political slogan, doesn't it?), is the ability to boot from the Floptical drive. If you don't have a disk in the A: drive, then the machine will attempt to boot from B: before trying the hard disk, and you can boot from either a floppy or Floptical disk. The supplied format utility also contains a switch to transfer the DOS system files to

DEVICES



the Floptical media (in the same way as format /s), and patch them to allow booting from the unusually large 'floppy'.

The documentation which came with the Floptical drive is the best I've seen for a piece of PC hardware for a long time. It goes into great detail discussing the limitations of DOS with regard to large removable disks, in particular, why the DOS format program can't be used to format the Floptical media. Of course, if you're not interested in the background, you can skip these descriptions, but having an inquisitive nature myself, I found the manual interesting reading.

Aside from containing a lot of useful and interesting information, it is also well written, which makes a nice change from some of the badly translated photocopies that parts of the computer industry seem obsessed with. It's not that the documentation for any of the other drives was in

any way lacking, but that for the Floptical went much further than it needed to, and is all the better for it.

One of the features I particularly liked, was the ability to specify the cluster size of the disk when formatting it. I like to use 2Kb clusters where possible, as it wastes less space than larger ones, without adversely affecting drive performance. Anybody who has used Compaq DOS 3.31 to format a 300Mb drive as a single partition, will know how much space that wastes with small files.

Unfortunately, I didn't manage to measure the data transfer rates of the various drives as I had originally planned to. The root directory of my hard disk took a

rather unfortunate turn, and I spent the best part of a day putting it back together again. However, the Floptical drive was certainly several times faster than a conventional floppy, and even when accessing conventional floppy media, it was noticeably faster.

Syquest

WHILE THE Floptical disk is basically a high capacity floppy disk, the Syquest is a true hard disk, with a solid aluminium platter. In order to protect the disk and heads from dust, the platter is contained in a plastic cartridge, with a sliding door which opens when the disk is inserted in the drive. Even so, the disk is far from hermetically sealed, as are conventional hard disks, so care should be taken to keep dust and smoke particles away from the drive. Of course, this is a good idea with

Multi media – all drives use 5.25-inch media, except for the Floptical, which is 3.5-inch. Top right is the Syquest removable hard disk, diagonally opposite the Bernoulli media.

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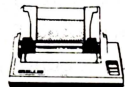
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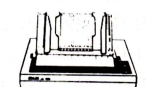
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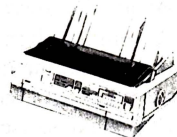
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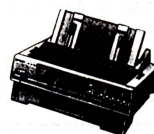
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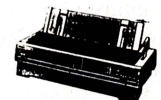
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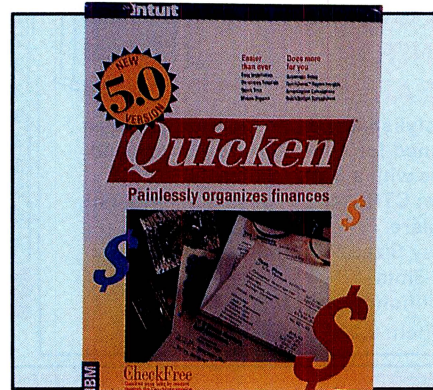
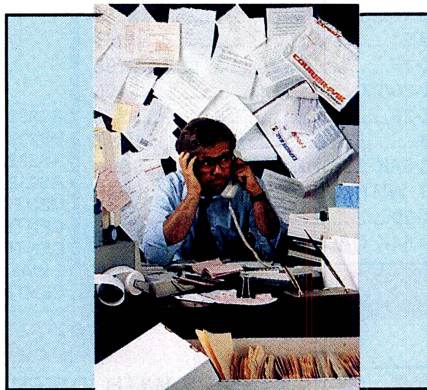
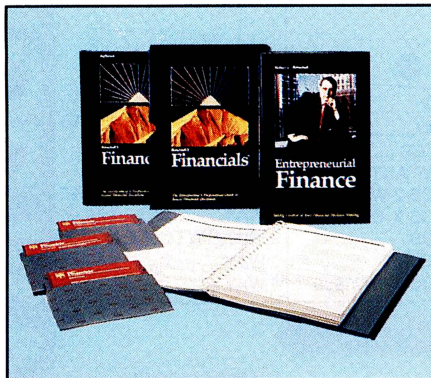
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any disk drive, but is particularly important, I think, in this case.

The Syquest drive came with a Future Domain SCSI host adapter, complete with a boot ROM. This hooks into the BIOS like the ROM for the Floptical drive, but doesn't permit booting from the Syquest unless there is no other hard disk in the computer. I guess this is because it is installed after the hard disk as drive D:, rather than B:, as for the Floptical.

One thing which annoyed me with the Syquest software was its default value of 4Kb for its cluster size – this is too big for my liking, since DOS 4.0 and later can handle drives of up to 128Mb with a 2Kb cluster size. This isn't so noticeable with large files, but if you're storing lots of small files, it wastes a lot of space. One way I found around this was to use fdisk to delete the partition on the disk and put it back again – this time with the DOS default cluster size of 2Kb.

The Syquest drive doesn't interface with DOS quite as seamlessly as do the other drives tested. On a drive error (for example, trying to access the drive when there's no disk in there), the driver prints its own error message, rather than reporting the error through DOS.

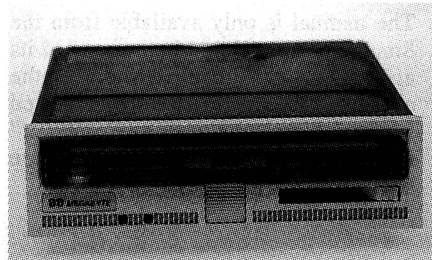
While this is fine if it happens at the DOS prompt, software applications each handle disk errors differently, and a message from a device driver printed on the screen is bound to mess up the display of any application. In the case of Windows, the message was unreadable, and the system hung when an attempt was made to read a non-existent disk. I think this is a major shortcoming – a device driver should never write directly to the screen in this way, but should pass errors to DOS, in the conventional manner.

Because of this limitation, I would be reluctant to use the Syquest drive from within Windows, and in fact, from within any application. This really restricts the usefulness of the drive as a high-capacity random-access device, which is one of the main advantages of removable disks over other removable media, such as streaming tapes, which are strictly sequential-access.

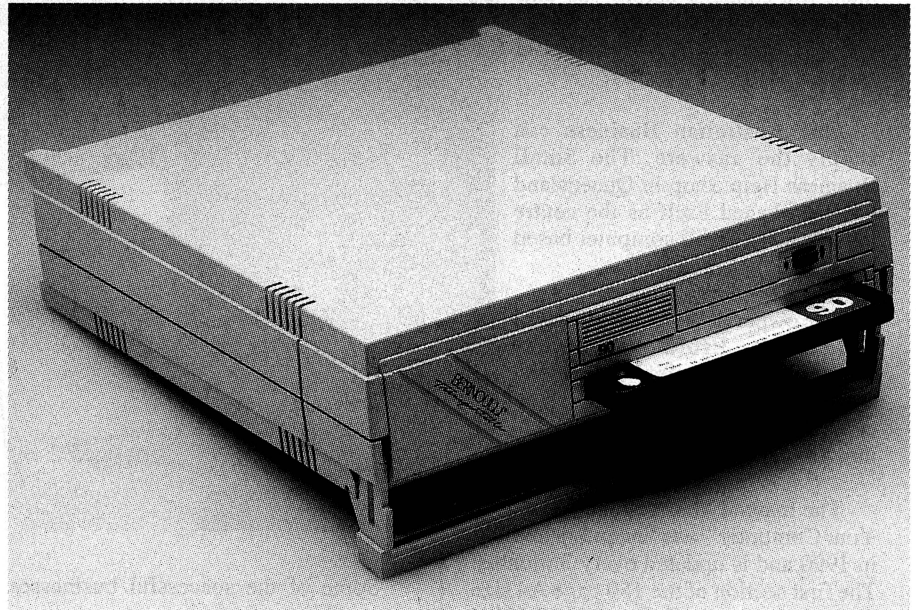
Bernoulli Box

TAKING A COMPLETELY different approach is Iomega, with the Bernoulli Box. This device started life as a 10Mb, 8-inch unit, and progressed through several models, up to the present 90Mb 5.25-inch unit. Like all the other devices tested, the drive is a SCSI device, but Iomega also manufactures a special adapter to allow it to be connected to a standard parallel port.

The Bernoulli Box uses flexible media, unlike the Syquest, its nearest competitor, but it is not a floppy drive. Rather than a single disk in the cartridge, the Bernoulli Box has two disks, with only one side of each being used.



We tested the internal version of the Syquest drive, although an external drive is also available. The internal unit mounts in a standard 5.25-inch half-height drive bay.



The portable version of the Bernoulli Box enables a single drive to be used to back up several computers, either via a SCSI host adapter or through its parallel port, if it isn't SCSI-equipped.

Also, instead of the heads touching the surface of the disk, as they do in a floppy drive, the disks actually spin a small distance away from the heads. This virtually eliminates wear on the disk and heads, and since the disk is floating, rather than the head, as in a hard disk, any dust which settles on the disk deflects the disk away from the head, preventing a head crash.

There are three versions of the drive available – a conventional internal half-height drive, an external one- or two-drive

system, and an external portable unit. The latter one is the model which we tested, and is a really well thought-out system. This is the model for which the parallel port adapter was specifically designed.

The idea is that you install a conventional SCSI host adapter in the computer with which the drive is to be used most, giving maximum performance. But, if you want to use the drive occasionally to back up other computers, or transfer large amounts of data between them, then you don't need to purchase separate SCSI adapters for each machine (although you certainly can do this if you want maximum performance from all machines). The drive can then be connected to any PC with a parallel port, and using the same device driver as the SCSI card uses, it can be accessed as a (slightly slower) local disk drive.

One thing I particularly liked about the Bernoulli Box is the way the disk cartridge sticks out of the drive by about 15mm or so. This allows you to see which disk is in the drive without taking it out, and also allows you to see (and change) the write-protect switch on the disk while it is in the drive.

Like the Syquest, the Bernoulli Box insists on using a cluster size of 4Kb, but in this case, there seems to be no choice. If the optional boot ROM is installed, you

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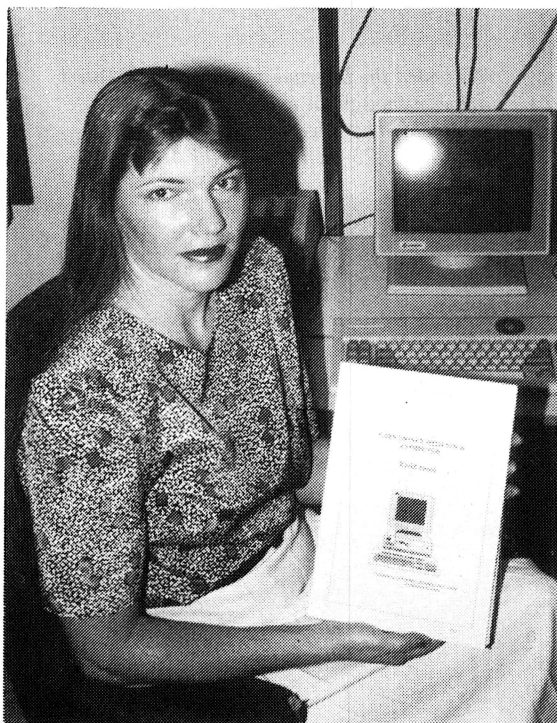
The owner of the Small Business Help Shop, Erol Ansell, has produced a complete "how to" manual that is designed to show computer users how to turn their PC into an income producing tool.

The manual "Earn Money With Your Computer" was first published in 1990 and is updated every 3 months. The first section of the 150 page A4 size manual gives you all the "WHAT YOU MUST DO - BEFORE YOU DO IT" information. This includes creating a Business Plan (essential to your long term success), doing your own marketing, establishing your business and doing it right - even down to making sure that your spouse is on side.

Section two is designed to show you some of the businesses that you can start at home using your computer. These include Desk Top Publishing, Telemarketing, Short Run Printing - right up to Computer Generated Signs and Engraving. The whole manual has been written to help you establish your own computer based business, either at home, or from a small office. You can even start out small and build your business over a period of time.

Following on from the manual are the monthly updates. These "UPDATES" are published every month and are full of helpful ideas, new business opportunities, stories of successful home based businesses and reviews of equipment used by people in their businesses. You can even call the Small Business Help Shop directly should you require any extra assistance.

The manual is only available from the Small Business Help Shop or one of its agents around Australia. Many of the over one thousand people who invested in "Earn Money With Your Computer" in 1991 have now started successful home based businesses.



Some of the successful businesses you could start include:

- **Instant Print Shops**, where you can produce short run business printing in colour
- **Telemarketing Systems**, your PC becomes a communications powerhouse.
- **Instant Sign Shops**, produce instant colour signs on your PC.
- **Instant Stamp Shops**, every business requires rubber stamps, using a PC, you can deliver stamps tomorrow.

If you have ever looked at your PC and wondered "How can I earn a living from you" it is time you invested in "Earn Money With Your Computer". And what is more, if you call the Small Business Help Shop right now on (free call) 008 079114, we will include your

first years **MONTHLY UPDATES** (Normally \$36.00 a year) **FREE** with your copy of "Earn Money With Your Computer".

Ask yourself a few questions:
Do I want to earn money using my PC?
Do I need extra cash?
Could I use help getting established?
Would I rather be working for myself?

OK, if you answered yes to any of those questions, pick up the phone and call the Small Business Help Shop on 008 079 114.

John Faulting of South Australia said of the manual, "I wish I had read this years ago". Allan Vickers from Victoria commented "The manual in itself is very sound value, but when you add in the regular newsletters and the consultations with the author himself... its an absolute bargain!"

The office of the Small Business Help Shop is located a few miles north of Cairns. The address is 12 Magnolia Street, Holloways Beach, 4878. (Who said you have to live in a big city to run a business?) If you wish, you can write to that address or send a fax on 070 559392.

In summary, "Earn Money With Your Computer" was written to show you "HOW TO" turn your Personal Computer into an income producing tool.

To order your copy of "Earn Money With Your Computer" contact the Small Business Help Shop. They accept Credit Cards, Personal Cheque or Australian Money Orders. If required, you could have your copy tomorrow morning. All orders received by 4PM are shipped that day.

One final point, if you're serious about earning money with your computer, you can do it. However you will have to stop procrastinating... Do something today for your future - call 008 079 114 and order your copy of "Earn Money With Your Computer" **NOW**.

You're probably thinking this manual is going to cost a fortune. Well it isn't.. Your investment in "Earn Money With Your Computer" is only \$69.00 and that includes postage to get it to you. There is even a complete money back guarantee - if for any reason you find the manual is not what you expected, you can return it for a no quibble refund.

may be able to get around this problem with fdisk, as I did with the Syquest, but I'm only guessing there. Again, it's only likely to be a problem for you if you intend to store lots of small files (like archival backups of BBS messages, for example).

The Bernoulli Box also comes with utility software to make life easier, including a special copy of the Super PC-Kwik disk cache, and SitBack backup software.

Canon MO drive

THE BIG DADDY of this comparison is without doubt the Canon MOD – a single disk stores 520Mb of data (although only half that amount is accessible at any one time). Even the drive is bigger than either of the others (it's bigger than a full-height drive, and about twice as deep), although the media is a standard 5.25 inches in size.

Again, the Canon uses its own SCSI host adapter, and comes complete with an on-board boot ROM. Although we did not test the boot ROM, we did so on a previous occasion that we had the drive in the office.

The Canon drive comes with its own 'fdisk'-type utility, allowing multiple partitions to reside on each side of the disk. Recall that only one side of the disk can be read or written to at one time, so each disk is essentially two separate disks as far as software is concerned – you have to eject the disk and turn it over in order to use the other side of the disk (just like the good ol' Apple II days, with the single-sided drives).

One thing to bear in mind is that with a disk this size (260Mb), a single partition results in huge clusters – 16Kb clusters, so storing small files on this disk is not a good idea, unless you elect to partition it. If you're going to partition the drive, there is a special command line switch for the device driver, which instructs it to reserve more than one drive letter, otherwise, only the first partition on the disk will be accessible.

Another annoying quirk involved the loading of the device driver for the drive. If the drive wasn't connected, or turned on, when the computer was booted, then the driver would print an error message to the screen, and then sit and wait for somebody to press a key on the keyboard! This is fine for an attended workstation, but means that if the drive is connected to a file server, if the drive fails for some reason, the server will not be able to reboot after a power failure.

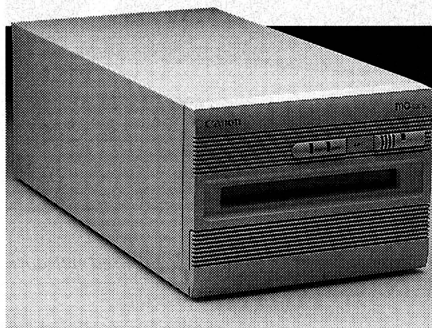
Which ...

WHICH DRIVE YOU ultimately choose depends on your requirements for removable storage. For portability, you can't

beat the Floptical drive, with its ability to store up to 21Mb on a single, standard-sized, 3.5-inch floppy disk. To be able to put this much data in a shirt pocket is truly a breakthrough, and being able to use the drive to read and write conventional floppies means that in most cases it can be installed in machines with no spare drive bays.

Cost per megabyte of the media is \$1.70, which is more expensive than floppy disks, but still far cheaper than the Bernoulli Box. And you can't put 21Mb worth of conventional floppy disks in a shirt pocket either (at least, not in my shirts).

In the middle of the range – the Syquest and Bernoulli box, my preference is for the latter. Its drivers integrate much more seamlessly with DOS than those of the Syquest, which had an annoying habit of trying to put its own error messages on the screen, against all current programming wisdom.



A big box with a big capacity – the Canon MO drive can store 260Mb on each side of its special 5.25-inch media. A single disk can store almost as much data as a CD-ROM.

Also, I would be a bit nervous of the long-term reliability of the Syquest, using as it does hard disk technology which is designed for use in a sealed environment, which the Syquest definitely isn't. Of course, without appropriate long term trials I can't give a definitive statement as to their reliability, but my gut feeling here also leans toward the Bernoulli – hey guys, can I hang on to these things for a couple of years?

However, the Syquest does have one major advantage over the Bernoulli Box – price. The Syquest drive is a little over half the price of the equivalent Bernoulli drive, and the disks are but a sixth the price, for virtually the same capacity. In fact, the Bernoulli Box has the highest cost per megabyte (per disk) of any of the drives

tested here – \$4.39/Mb. The Syquest was second lowest, at \$0.87/Mb (including tax).

And finally, at the top of the capacity (and price) ladder, is Canon's half-giga-byte monster. For archival data storage in applications where large amounts of data need to be stored in an easily-retrieved manner (four cartridges store about the same amount of data as a DAT tape), you can't go past it. We also (sort of) gave the Canon a long-term test – we recognised the drive and disk as the same ones that we had tested 12 months ago, although, any data we had left on the disk was long gone – erased no doubt by other enthusiastic testers, like ourselves.

The Canon would be the choice for large volume applications – each disk is actually cheaper than a disk for the Bernoulli Box, even though it has over five times the storage capacity, giving the Canon disks the lowest cost per megabyte, a mere 66 cents. □

Product Details

Floptical Drive

From: InSite
Distributor: Westmeg
(02) 743 2919
Internal drive: \$696
Controller: \$95
Disks: \$34

Removable Cartridge Drive

From: Syquest
Distributor: Allaw Technologies
(02) 415 9111
Internal drive: \$1477
External drive: \$1679
Controller: \$347
Disks: \$77

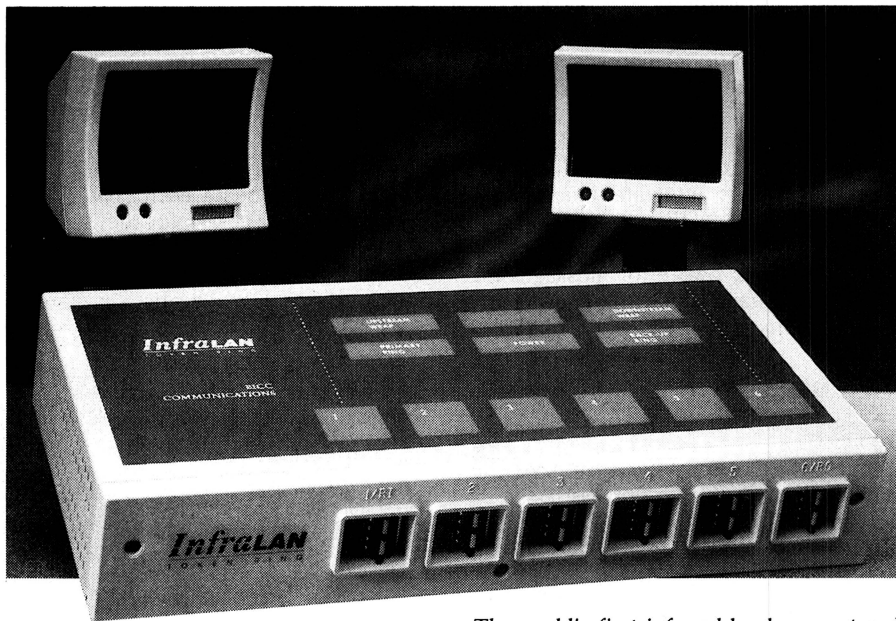
Bernoulli Box

From: Iomega
Distributor: Sourceware
(02) 427 7999
Internal drive: \$2195
Transportable drive: \$2395
Dual external drive: \$4495
SCSI controller: \$495
Parallel port adapter: \$495
Mac interface: \$95
Disks: \$395

Magneto-Optical Drive

From: Canon
Distributor: Canon Australia
(02) 887 0166
External drive: \$5595
Controller: \$495
Disks: \$345

Infrared Cableless LAN



The world's first infrared local area network (LAN) system.

OPERATING AT A data transfer rate of 4Mbits per second, and soon to be available at 16Mbits per second, InfraLAN is compatible with the IEEE 802.5 standard and provides Token Ring connectivity without any hardware or software modifications to existing equipment.

InfraLAN can be used to extend the capabilities of an existing fixed LAN or to provide solutions in situations where cabling is not feasible due to practical or cost considerations. Unlike traditional cabling, infrared technology can be quickly assembled and relocated with the minimum of fuss, overcoming the problems of expense, inflexibility, and stringent planning requirements in terms of physical space and building restrictions.

Commenting on the release, Nick Jackson, general manager, BICC Communications, said 'InfraLAN is adaptable to almost any LAN site. In particular, we see a huge market for InfraLAN wherever there is a requirement for frequent repositioning of nodes such as branch offices with short

leases, point of sale terminals in stores, or where mobile teams, such as auditors, stay on various sites temporarily.'

Infrared technology has a number of advantages over other cableless technologies such as spread spectrum- or microwave-based systems. Through the use of light emitting diodes (LEDs), infrared has immunity to radio frequency interference and is secure from outside signal interception. Based on the same technology as that used in television remote control units, it is also very safe. Austel licensing is not necessary for users' sites or individual departments eliminating the need for lengthy licensing procedures.

The InfraLAN Token Ring base unit provides six workstation ports, two of which can be linked to industry-standard Multistation Access Units (MAUs). This enables additional devices to be connected to the base unit for system expansion and provides an interface between the InfraLAN Token Ring and traditional cabled Token Ring systems. Comprehensive network

BICC Communications recently announced the availability of InfraLAN. An innovative cableless local area network system based on infrared technology.

diagnostics on the base unit and optical nodes allow the user to constantly monitor network status.

Using InfraLAN base units and optical nodes (transceivers), complete Token Ring networks can be installed quickly with minimal technical assistance. When necessary, these can be disassembled and relocated just as easily. All products are completely re-usable, eliminating the cost of abandoning cable during office moves.

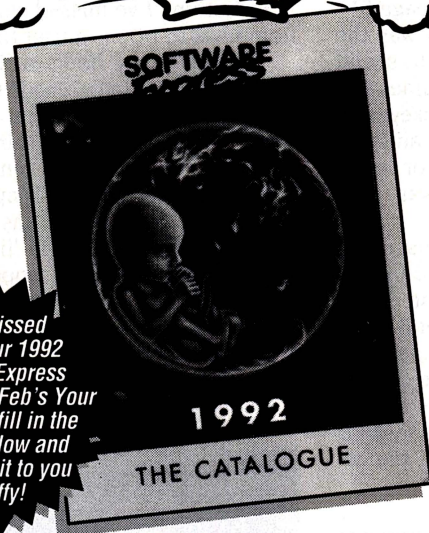
Resilience is built into the system: in the event of the primary infrared path between two optical nodes being obstructed, the signal automatically re-routes on a backup path around the network to reach the desired location. This ensures that signal integrity is maintained at each user location at all times without loss of data.

'Networks need to reflect modern business environments,' Jackson said. 'People, terminals and even office sites are in constant flux. The value of a network is gauged by its flexibility – whether in terms of compatibility or mobility. InfraLAN addresses these needs. It offers simple economic connectivity, abides by de facto and international standards, and above all, is quick and easy to install.'

An Ethernet version of InfraLAN will be available later this year.

For further information contact Nick Jackson, BICC Communications, (02) 980 6922. □

NO BULL



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POWER

ONE OF THE ADVANTAGES that a graphical user interface like Windows offers to most users, is the ease with which programs can be launched. It also insulates users from the DOS prompt. But there's a helluva price to be paid for that: a reasonably fast '386 system with 2Mb of RAM is necessary and the continual Unrecoverable Application Errors are frustrating enough to make you wonder if it's really worthwhile.

I'm not going to go on about the problems with Windows – suffice to say, not everyone needs it or even wants it.

If your primary applications are not Windows-based, then a text-based file and program manager can make computing life a lot more satisfying. I've been using the Norton Commander since version one for that – while it is very good at what it does, it lacks features I've frequently yearned for. Most notable of these are that there is no straightforward way to delete or move whole directories and the related files; the only security available for the

files is to set them as hidden (in the US version encryption is available); and there is no facility for keeping a usage log.

All that – and a lot more – is in PowerMenu Plus (version 6.0) from Brown Bag Software which Manacomm sent me to have a look at. In fact, I thought it was so good we are offering it to readers – see this month's subscription offer, page 51.

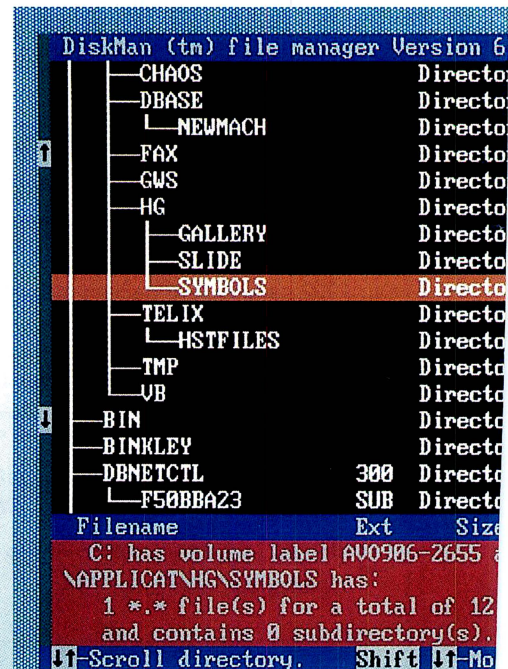
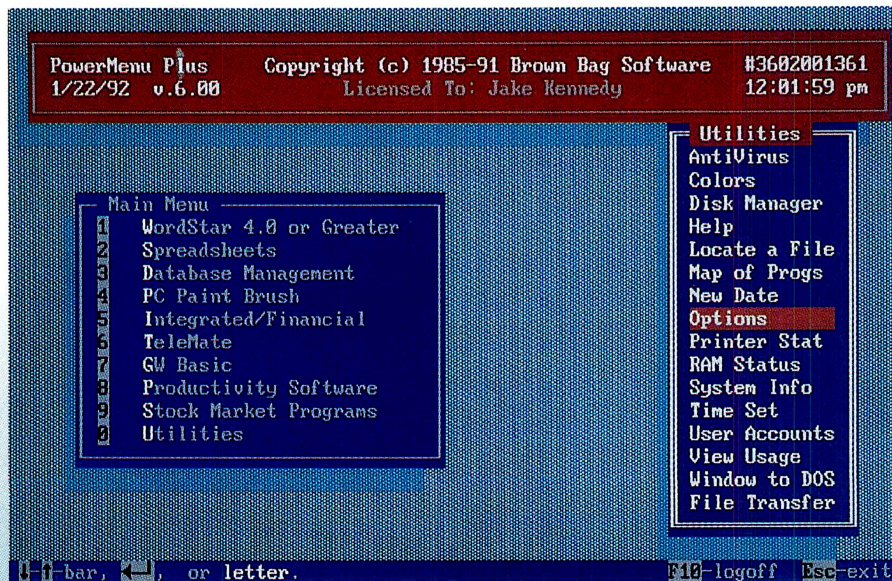
The first thing I liked about it was the ease of installation. I'd expected to spend an hour or more typing in path names and configuring menus – but the monkey work was done by the install program and all I had to do was select a half dozen or so options. In less than 10 minutes, it was ready to go.

PowerMenu is certainly very useful to any stand-alone user who is the only one working with a particular machine, but it really comes into its own if several users work with one machine or on a network. Each user or user group (both are catered for) can have customised menus to suit their work-practices and access to these is password restricted. For example, the ac-

counts group would be able to access the accounting programs only, while the design group would only be able to use their drawing and related software. However, everyone would be able to use the word processor, but would be restricted to processing or reading only those files on a particular drive or in a particular directory.

Something I've missed since we moved from CP/M to DOS is a user transaction log – just how many hours a day *does* Mark play Flight Simulator? Aside from that, the log can give an indication of what was going on just before the third mysterious crash of the day. More generally useful, however, is the ability to keep track of 'billable' time. PowerMenu has the facilities to do all that, including a 'filter' that will output usage by user, application or a project name to either an ASCII file or the printer.

If you think that all of these features are

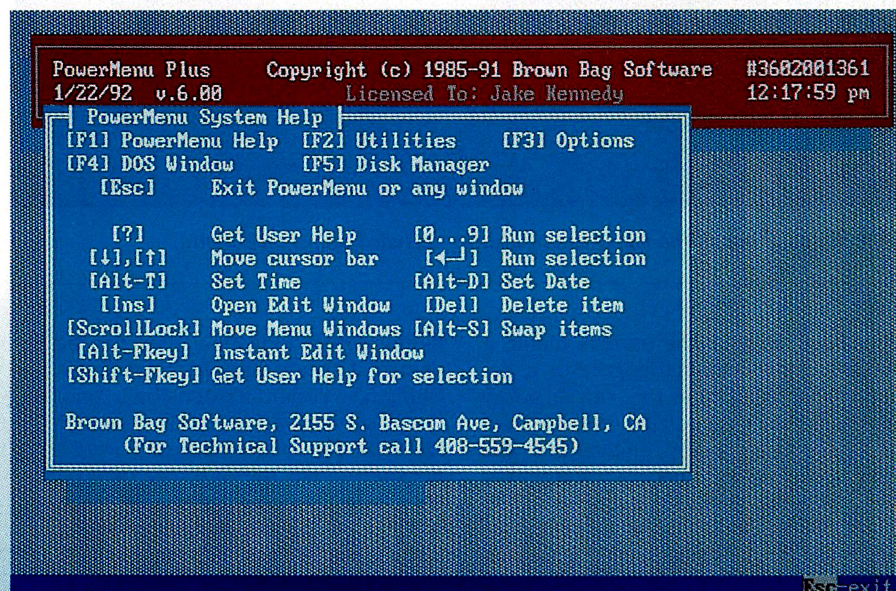


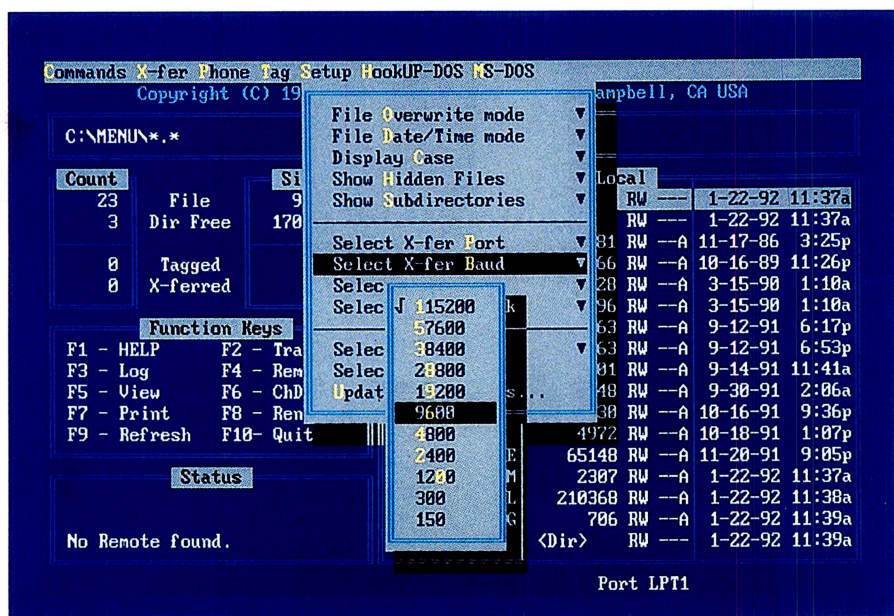
Looking for a DOS menu system and file manager? Communications program? Security system? File transfer utility? Read on . . . Jake Kennedy has found just the item.

Another nifty feature of the editor is that if you enter a file name with a .bat ex-

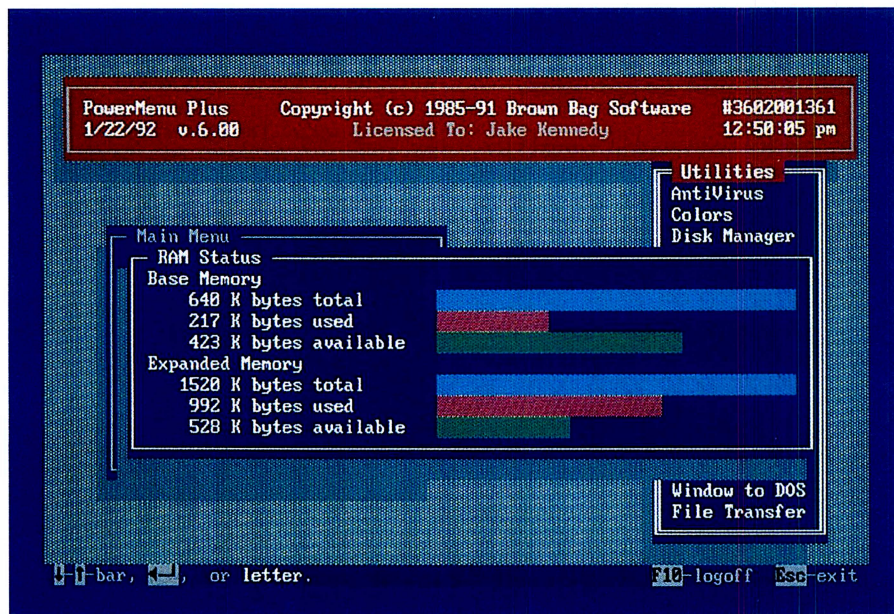
There is virtually no limit to the number of programs which can be put on the

Below right: In addition to this general help screen, context sensitive help is available for all possible selections in PowerMenu.





PC-HookUp is a fully-featured communications program which supports direct file transfers.



RAM Status is one of the many handy utilities included with PowerMenu.

When fired up from the utilities menu, it displays either a directory tree or a detailed list of files, from the root directory down. Applications can be run and text files edited simply by highlighting the name and choosing Run or View from the menu. The display features a file mask so only *.dbf files or w*.*, for example, are shown and files can be tagged for group erasing, moving, copying, protection and

hiding. While individual files can be renamed, it seems that group renaming, say changing a common extension to another, is not supported – and this is one of the few criticisms I can make of PowerMenu. Another is that the directory information isn't saved between uses, so it needs to be rebuilt each time DiskMan is called up – that took about 20 seconds on my 100Mb C: drive with 118 directories.

Pkzip is included with the package and has a viewer for browsing zip-ed files without uncompressing them.

Directories can be sorted alphabetically or by extension, date, time and size. They can also be renamed, duplicated, made erased, moved and hacksawed. Selecting hacksaw will erase all files in the directory including sub-directories and their files – a very handy, time-saving feature.

If you think that all of these features are RAM hungry, you're wrong.

Usually when a communications program is included with a package, it's nothing special. PowerMenu's PC-HookUp is certainly an exception. It adds a wealth of file transfer features to a very good communications program and compares favourably with even the latest version of LapLink Pro. For transferring files between adjacent PCs, say a laptop and desktop, five(!) serial ports and three parallel ports are supported at speeds of up to 115Kb/second. Hook-Up has a wealth of features including the ability to print a directory tree or list of files on either the local or remote computer, and to batch print a group of selected files. It also has a built-in editor (any nominated editor can be used, too), a WordStar clone, that includes a hex editor. In fact, the only shortcomings I could find with either mode of Hook-Up were that there is no script language support and the only protocol supported is XModem.

I've only been using PC-HookUp for a week, so I'm still learning its myriad features – did I mention it has a built-in virus checker, file finder and screen saver? But, I've seen enough to know it's a bargain. □

Product Details

Product: PowerMenu Plus v6.0
Distributor: Manacomm Pty Ltd
(07) 368 2366, fax (07) 369 7589
Price: \$135

PowerMenu is certainly very useful to any stand-alone user who is the only one working with a particular machine, but it really comes into its own if several users work with one machine or on a network.

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**ANNE
GLOVER**

Adult education - do it yourself

FOR THE LAST three years I have been meaning to embark on a Stress Management course. I think about it, start planning it, and then think about it again. Finally I've decided that using a shoe horn to fit the course into my already busy day, plus driving through the peak-hour traffic and finding parking, only to present my problems to a group of strangers, would add immeasurably to the stress level. This is even before I find a way to scrape together another couple of hundred dollars from my terminally ill budget and organise some complicated family arrangement to cover my absence. I find myself wondering if the reduction in stress achieved by participating in the course would even equal the added stress the course imposed on my life.

Such is the case with many opportunities for adult education. We need to add up the costs, whether they be financial or otherwise, as well as examining the benefits. Sometimes it just becomes all a bit too hard.

Last week a box of 'adult education software' arrived on my doorstep, and in the process significantly changed the balance of the equation. If you can teach yourself at home, the parking and driving hassles are eliminated, and the cost to your time and to family relationships will also be greatly reduced. So no more excuses from me - stress management, here I come!

If you are to teach yourself, you may well ask 'but what sort of teacher am I, and what sort of student?' Will you expel yourself from class, give too much homework or forget to turn up on time? Your performance in both roles will have a direct bearing on any outcome you achieve. With the assistance of some well-designed software you may become a good teacher and even a successful student. However, you will need to face the fact at the very beginning that if you don't really want to learn, there is no point embarking on this path.

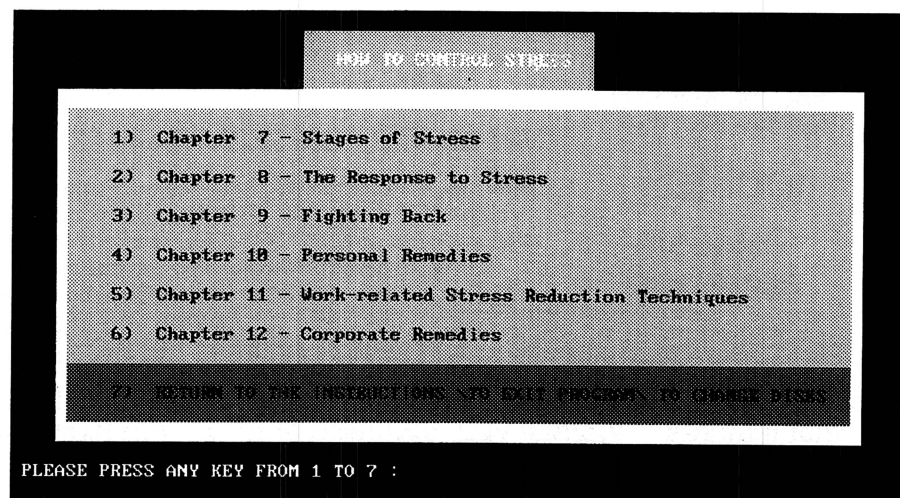
Adults choose to study for a variety of reasons. Many people join courses to further their career, finding a certificate or degree essential for their progress. You will not receive any external recognition

for completing one of these programs, so don't expect to complete your MBA this way! Some people embark on a course of study for recreational purposes, to meet people and make new friends, this need will not be satisfied with such a course. The camaraderie found in many on-site courses will also be missed by many students. The sharing of problems and ideas to achieve a common goal is all a part of on-site education.

Courses conducted on your own, present students with the problem of determining their own needs. Many people are

of your time constraints, more flexible with your pace of learning, and less embarrassing with your blunders.

'What range of educational programs is available for adults?' I hear you asking. If the volume of educational software available for preschoolers and lower primary children represents a torrent, the numbers quickly tail off and unfortunately resembles a trickle for adult students. Some of these programs can be very useful, sure, you won't be completing your master's degree on your PC in the attic, but you may be developing many useful skills.



How To Control Stress develops an awareness of the problem and means of self-management. It will also assist in identifying those under your direction who are potential sufferers of stress related problems, and show you how to reduce stress levels in the workplace.

unable to determine their true requirements, if this is the case, progress will be stifled until you happen to stumble onto the right path. In the classroom context an experienced teacher should be able to identify your needs and set you straight. I guess the bottom line is, if you have the right personality and a degree of self-discipline, there are things you can teach yourself at home and there are other areas that just cannot be handled effectively this way.

If you decide this style of learning is still appropriate, you will find it more forgiving

Teaching yourself to type, or to use your PC more effectively, even a course in time management or stress management, may help us achieve some of our long term goals. Whether your goal is of a personal nature or if it relates to your career or academic performance, one of these courses may help you on your way.

Another side to the adult education story is computer based training (CBT) in the workforce. With the advent of the Training Guarantee Allowance, many organisations are boosting their internally developed CBT or making use of the bur-

growing number of companies specialising in the development of workplace training programs. Now that the initial panic is over, companies will become more critical consumers of training products. They will be more discerning, examining in more detail their own requirements as well as the products offered.

As with home based computer courses, motivation levels, as well as successfully matching resources with needs, will largely determine the degree of success achieved.

How To Control Stress

HARNESSING STRESS to become a positive factor in your life rather than a destructive force, is one of the main messages of this piece of software. The program is quite thorough, covering causes, symptoms and stages of stress as well as ways to fight back, personal remedies and work-related stress reduction techniques. The package also contains a basic manual that sets out the contents of the program, but it is not designed to become the main instructional vehicle.

Like many adult programs, How To Control Stress is text-based. You will not be presented with a full page of text to plough through. A chunk of information, in one or two sentences, pops up on a coloured background at your request.

*Sometimes it just
becomes all a bit too
hard.*

How To Control Stress is particularly applicable for people in a managerial role. Apart from developing an awareness of the problem and means of self-management, it deals with stress management for staff members. Further, it will assist in identifying people under your direction who are potential sufferers of stress related problems and show you how to reduce stress levels in the workplace. The final chapter deals with management responsibilities and looks at developing a corporate stress management strategy. This program could well be installed in the computer based training system in the workplace. The only problem being, when answering the review questions at the end of each segment, some busy-body looking

The Complete Introduction to IBM PC Compatibles offers six interactive audio-disk training sessions, a disk-based tutorial, exercises and revision material. Three training sessions cover DOS principles, four cover Windows and two others discuss DOS in action.

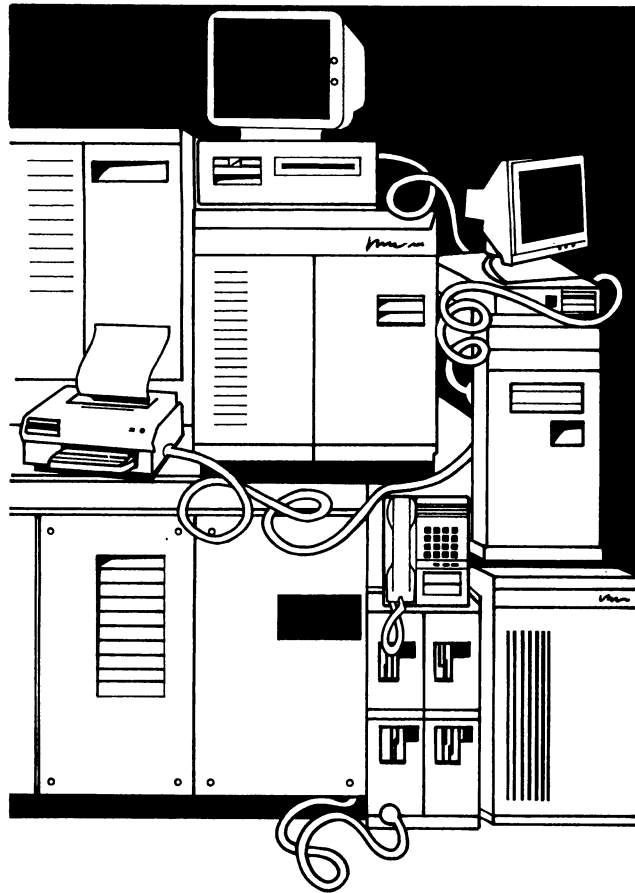
over your shoulder may create a bit of stress for the more inhibited worker.

All that aside, it is a useful program for people managers and for home use by all types of people. Although it has a leaning towards the needs of the corporate client, the concepts remain true of any person, in any walk of life.

How To Control Stress is very easy to use and not too painful to sit in front of for a few hours. The program will probably make you more aware, and help you to develop strategies to reduce your level of

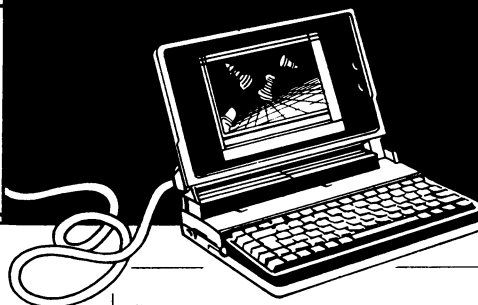
stress, but it cannot do the work for you. Granted, some understanding of the problem and a pathway to follow may even reduce stress to a degree in some individuals. However, the hard work really begins once you have completed the program. Changing your diet, or exercise regime, modifying your responses and changing your attitudes are all much easier to read about than to actually do!

How To Control Stress is distributed by Reckon Software, (02) 550 2666. RRP \$299 MS-DOS format.



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The Complete Introduction to IBM PC Compatibles

YOU HAVE JUST purchased your first PC. You don't have that cousin or work mate that knows 'everything' about computers, or perhaps you do, but past turning on the power point they suddenly start to talk another language. DOS, boot disks and copy protection along with megs and RAM. Of course you mumble 'yes' when he asks if you understand, after all he has repeated the instruction three times and you don't want him to think you are a dill. So as he man-handles your new baby, he also leaves you in oblivion. What have you let yourself in for you ponder. Everyone at work tells you that operating a PC is simple. Does that mean your IQ has dropped through the floor when you weren't looking, or is your great mate a lousy teacher?

At this point you do still have a few options. Play along with your friend, as he sticks out his chest and relates all he knows. You don't want him to think you are an idiot. Don't worry he will leave in

Don't waste more time and money enduring a course that is either above or below your level.

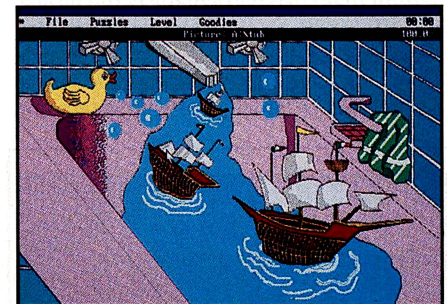
A third option is to look at something like The Complete Introduction To IBM PC Compatibles. Unlike many such programs, this one is not purely disk-based. If you have not used a computer before, operating a program from a disk may not be the ideal way to begin. This program starts with a couple of audio cassettes (three in all). Much of the basic information is covered before you get stuck into the disk-based work. As the title suggests, The Complete Introduction To IBM PC Compatibles starts at the very beginning before moving onto word processors, spreadsheets and databases. It covers how to back up your disks (and why you should do so), what the keys are used for, and it won't complain (or think you are stupid) if you need to re-run the tape 16 times before you get it right.

The male voice on the audio tape is easy to listen to, clear and concise. He does repeat things frequently to reinforce information for beginners. As you progress through the program, you move from being a listener, to a participant using the PC and the software supplied. By the end of the course you will have worked with a simple word processor, database and spreadsheet, all of which are supplied with the program. Instructions up to DOS 4 are included as well as a look at Windows.

While working through the program with a friend may make the time pass more pleasantly, you could easily do this one on your own (even if it won't make the most fun of your weekends). Naturally you can come back to the program again and again as your needs and your skills develop, and it can be used by other members of your family or organisation (of course copyright regulations apply).

With the acceptance of Windows and OS/2, the need for a high degree of direct user interface with the PC will be reduced for many users. This will make the introductory stages much easier for beginners. If you don't have a friend with ample knowledge that he or she is willing to share, coupled with the ability to explain and teach at your level, then a program such as this one may still provide you with a paddle when your friend dumps you up the creek.

The Complete Introduction to IBM PC Compatibles, \$59.95, is distributed by Reckon Software, (02) 550 2666.



Jigsaw has 10 puzzles included – these can be fragmented into 8 (middle), 18, 40 or 60 (top) pieces – pity about the colours, though.

If you are to teach yourself, you may well ask 'but what sort of teacher am I, and what sort of student?'

about 10 or 12 hours secure in the thought that he has done you a great favour. You wonder meanwhile if you will ever even get to first base, your self-esteem has disappeared with the packing boxes, and you are thinking that the money would perhaps have been better spent on comic books.

Many people will find a truly helpful friend who will hold their hand through their infancy with their PC. If you find one of these gems you will be deeply indebted and will probably take a long time to wean yourself away from their useful advice.

Another option is to enrol in an appropriate course at a public or private educational institution. Make sure the course is aimed at your level and suits both the hardware and the software you intend to use. Ask around, take advice from other people who have completed such courses or at least ask plenty of questions to ascertain the right course for your needs.

Jigsaw

I'M NOT REALLY one for jigsaws. I never seem to sit still for long enough to complete a decent one. Plus it seems if I did get close to completing one, my two year old dynamo would ensure that such a peaceful scene would imminently meet its demise. The next attempt at such a therapeutic pursuit would probably occur after the five-year old has found the funny green bit and glued it to her pushbike. The last piece of grass in your puzzle has unknowingly become the 'on' button on her now personalised Cyclops. So much for peace and tranquillity!

If you are a jigsaw person, and are at times frustrated by the loss of that final piece of grass, this program may be for

you. Called simply Jigsaw, it is an education for children and adults alike. A range of over 10 pictures are included to get you started. These include both kiddie pics and adult pictures too – not *that* sort of adult picture! The pictures can be fragmented into 8, 18, 40 or 60 pieces ready for reassembly. A six year-old could assemble an 8-piece rubber ducky picture while mum or dad struggles with a 40-piece chunk of scenery (or perhaps it should be the other way around). If everyone is in a competitive spirit, completion times can be compared as they are recorded for you. Junior may have a little victory over Dad's more complex project. Fastest scores will be recorded in the Hall of Fame.

Additional pictures can apparently also be added through Deluxe Paint, or you may wish to purchase the addition disks covering topics such as nature, fine art, early learning, dinosaurs and famous places.

This program is very easy to use. One feature that I like particularly is the mouse doesn't need to be held down as you move the pieces around. Many other programs do require dragging the piece across, this is difficult for youngsters and

ARE YOU FEELING at ease with the idea of entering the world of computers? If not, Computer*Ease is a gentle way to introduce you to this strange new environment. This program is even more elementary than The Complete Introduction to IBM PC Compatibles. Computer*Ease will tell you about hardware and software in a very simple way. Each piece of information appears in small chunks, using everyday language.

The Computer*Ease packaging could win an award for providing the least amount of information possible, so here is some idea of where this program can take you. Computer*Ease self boots, (that means you just stick it in the computer and it will run automatically). Pointing to the areas that interest you will call up a small amount of simple information on each area. The program looks at basic software, monitors, printers and other hardware. Each section is easy to read and absorb as everything is very simple. As this program is meant only as an introduction, it will not have you operating a word processor tomorrow (or even the next day). It does provide a useful first base, but stops right there. Computer*Ease tells you the purpose of such programs as spreadsheets and databases, it may even show you a simple example, but it will not involve you in working on such programs.

Computer*Ease will not interest the majority of people who have already picked up a wealth of information as they stumble through their computing. It will be of immense value to those workers, students or teachers who are really starting out at the very beginning and especially for those who have some block or phobia regarding computers. Computer*Ease could be used effectively by teenagers or adults. Most of today's teenagers will already be familiar with the information in this package, but this program will help mum and dad find out what their kids are talking about.

A useful and very economical introduction to computers, it is easy to understand and operate.

Computer*Ease, \$19.95, is distributed by Pactronics (02) 748 4700.

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even adults will often drop bits in transit.

I'm not really sure why, but pictures can also be printed. Perhaps junior can pin up all his victories as a constant reminder. Or maybe he would like to cut up the paper versions and make a hard version of the jigsaw. I printed one up for interest's sake and found it to be a good representation, but the colours were a bit yucky.

Other features of this program include a view or no view option to have a peek at the picture. When playing the 'hard' version, pictures will appear scrambled from the start and there is no peeking. If you have selected one of the more complex formats, it is useful to take advantage of the 'save' option so your partner doesn't complain about losing you for hours on end.

Not strictly an educational program in itself, but one that spans nicely the 'entertainment' area. One for the big kids and the little kids alike.

Jigsaw is distributed by Dataflow (02) 331 3665. RRP \$69.95 MS-DOS format.

Feedback

I WOULD BE very interested to hear your comments, queries and suggestions on the subject of computers and education for all ages. I would also welcome any personal experiences you may have had using computers for education. Please write to me at PO Box 786, Riverwood NSW 2210. If you require a reply, please enclose a stamped, self-addressed envelope. □

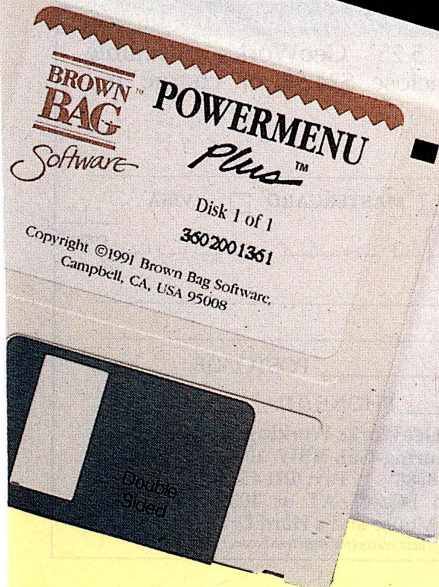
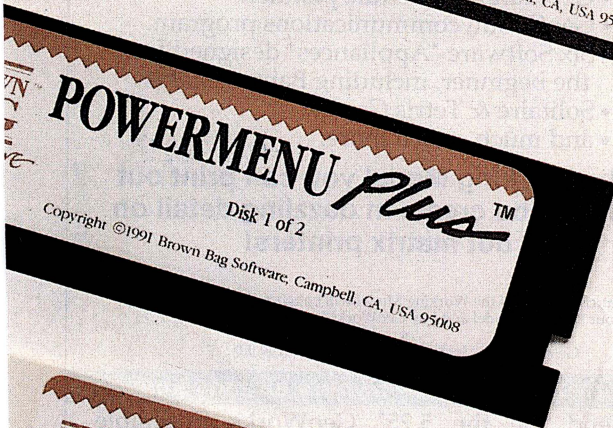
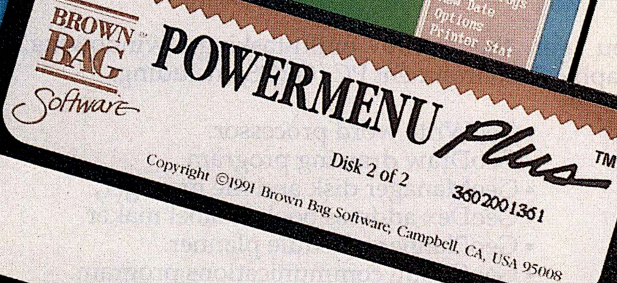
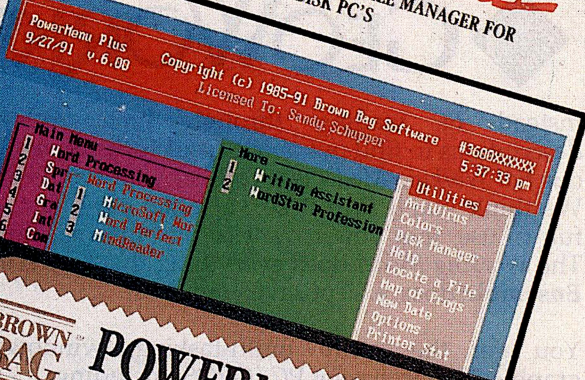
Other courses available

SOME OF THE programs that I am aware of include: The VocabuLearn Ce series which is a Japanese, German, French, Hebrew, Spanish or Italian foreign language program distributed by Dataflow, (02) 331 3665. Reckon Software, (02) 550 2666, has a series of computer assisted business skills courses including: Teach Yourself Financial Accounting, Corporate Finance, Sales Force Management, Book Keeping To Trial Balance, Competitive Strategy,

How To Manage Your Time Effectively, and How To Manage Other People Effectively. Pactronics, (02) 748 4700, distributes a Chinese writing program called Chinese and Speed Read, and Edsoft, (02) 956 3808, has a range of math and science programs designed for senior school students and adults, for example, Data Models and A Graphic Approach to Calculus.

POWERMENU PLUS GIVEAWAY

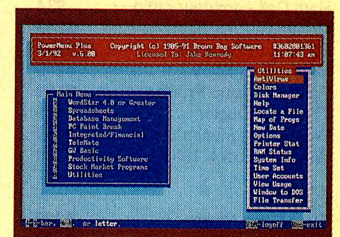
POWERMENU *Plus*™ COMPLETE MENU SYSTEM AND FILE MANAGER FOR HARD DISK PC'S



Subscribe to *Your Computer* this month – only \$47 for 12 issues including postage – and you will receive a free copy of Brown Bag Software's PowerMenu Plus (reviewed by editor Jake Kennedy on page 42, March issue). PowerMenu is a full-featured, menu system and hard disk manager for IBM compatible computers. The package also includes a multiple-level security system complete with usage log (handy for keeping track of time spent on projects) and a communications package for both PC/PC and PC/modem file transfers.

If you have been running your programs from the DOS prompt, then PowerMenu Plus will make your computing life a dream. The menu system sets itself up when the program is installed (it couldn't be easier). Menus can easily be configured for multiple users on the same PC or on a network, each with their own password. The simple system enables those who have never used a computer before to be productive in minutes! The security features prevent unauthorised users - and curious kids!

PowerMenu Plus includes hundreds of dollars worth of additional utilities: a full-featured communications and file transfer program, a security system which includes a virus checker, and a file manager that can work on whole directories and their sub-directories, plus an accounting log, showing who did what when and for how long.



Every subscriber to *Your Computer* this month will receive a copy of PowerMenu Plus free. Subscribe today and never look at the DOS prompt again! PLEASE NOTE: To receive the manual, your copy of PowerMenu Plus must be registered.

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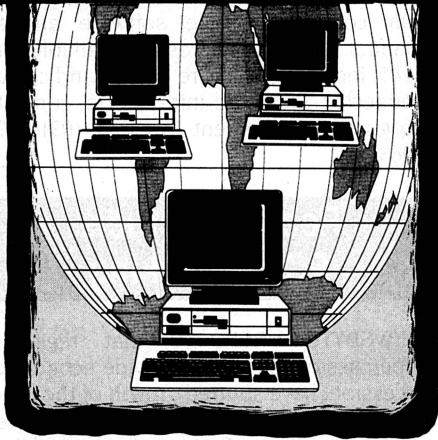
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System Requirements: IBM PC/XT/AT or 100% Compatible, 512k RAM, 5.25 Disk Drive, Mouse and a Hard Drive.

Trademarks belong to their respective registered owners.

NEW CONNECTIONS



**Edited by
Mark Cheeseman**

Dial the time

TELECOM AUSTRALIA is in the process of implementing a machine-readable time service, to supplement the existing 1194 speaking clock service. The service transmits the current date and time as plain ASCII, at 1200bps, using V.22 modulation. The data is transmitted once per second, until the call times-out after 20 seconds.

Currently, the service is available in Melbourne on (03) 600 1641, and Brisbane on (07) 221 7033 (why couldn't they make it the same number in each state?). Until the service appears in other centres, there's nothing stopping you dialling one of these numbers – if you keep the call short, it will only cost as much as a local call anyway.

Now all we need is some software that allows us to automatically set our PC time from this information.

LANTastic for Windows and twisted-pair

DIGITAL SOLUTIONS has started shipping Artisoft's LANTastic for Windows – a Windows version of the network management utilities supplied with the LANTastic network software. The new software offers the same functions as the standard DOS utilities, but uses the Windows user interface.

It also incorporates support for dynamic data exchange (DDE), allowing users to mail data to one another from Windows applications. For example, an Excel spreadsheet can be created by one user, and sent to another user, who can then

open the file from within the same application as it was created simply by double-clicking on the icon. LANTastic for Windows is priced at \$379.

Artisoft has also released a range of cards supporting the new 10Base-T twisted-pair Ethernet cabling system. These include an 8-bit card with a single 10Base-T port, a 16-bit card supporting 10Base-T and an AUI port (for 10Base-5), and another 16-bit card supporting all three Ethernet cabling standards. The cards are \$298, \$454 and \$532, respectively.

One of the most expensive components of a 10Base-T network is the hub, which is required for any network consisting of more than two stations. Artisoft has also released an inexpensive 5 port Peer Hub, which installs within a PC, thus saving the cost of a power supply and case for a stand-alone hub. The hub would typically be installed in a file server, or any other machine which is powered up continuously, and up to four Peer Hubs can be installed in a single machine, for a total of 20 10Base-T ports.

The hub connects internally to the server's own network interface card, so that it doesn't occupy one of the external ports. The Peer Hub is priced at \$619. Digital Solutions also has a 10Base-T starter kit, consisting of two 8-bit interface cards, a Peer Hub, and cables and software, for \$1364. For more information, contact Digital on (07) 883 1851.

A real entry-level network

WITH THE TRADITIONAL players in the low-end network market slowly creeping up the pricing ladder, there is a call for a true entry-level network, for file and printer sharing in small offices. A fully Australian developed and manufactured solution has been available from Victorian-based Program Development Systems for some time, but it has undergone significant development since we last mentioned it. Called MNS, for Murrumbidgee Network System (no prizes for guessing where Program Development hails from), it uses 25 core ribbon cable to implement a bus-type network.

Your Computer has been somewhat closer to MNS than most other products that we review, having been coerced into becoming a test site for the product. Actually, it didn't take too much persuasion on Phil Bertolus' part to get us interested –

Netware for OS/2

NOVELL CLAIMS it is now ready to ship version 2.0 of its Netware Services for IBM's OS/2 operating system.

According to the company, Netware Services for OS/2 includes Netware Management Map, a new OS/2-based Netware management application, as well as the Netware Requester for OS/2 announced earlier this year.

Netware Management Map is designed to reduce the time required to manage Netware by automatically recognising all Netware nodes on the network. Once the nodes are recognised, the software creates a graphical display, or map, of the internet using icons to represent the network servers, communications servers, cable segments, routers, and workstations.

Novell says the Management Map can reduce network downtime, since it continuously monitors the network, updating the graphical display with the on-line/off-line status of each node.

Selection of any icon will display the configuration data, statistics and other resource data without having to access the server. The map can also be used to maintain a physical inventory.

Network Requester for OS/2 2.0 provides users with transparent access to all features of Netware and its services, including file, print, database, network management, communications, and messaging. The Requester uses icons to represent desktop utilities, and what Novell calls an enhanced installation program, which simplifies the installation process. Both utilise IBM's Presentation Manager.

The Requester supports OS/2 distributed applications such as Notes from Lotus, and SQL Server from Microsoft and Sybase. Novell says that customers using DOS Macintoshes, PCs running under OS/2, or Windows and Unix workstations can access those applications in their native computing environment.

The Requester reportedly can run over 1000 simultaneous named pipe connections, support high-performance 32-bit adapter cards and all OS/2 application programming interfaces.

Novell's Michael Adams told Newsbytes that it will begin shipping at the same time IBM puts OS/2 release 2.0 on the market, which according to Adams is expected to be in March of 1992.

we were in the market for a network to tie all our office machines together, and Phil made us an offer we couldn't refuse.

Trying to use software that was still under development in our day-to-day ac-

MicroAustralia focuses on networks

MICROAUSTRALIA – the Australian subsidiary of US distributor Merisel – says it will move heavily into network systems in 1992. Despite hard times in the marketplace, MicroAustralia has consolidated its position in the Australian marketplace, running a close second to Tech Pacific.

Managing Director Verilyn Smith said the company has developed a significant level of expertise with both IBM (which it started distributing in the third quarter of last year) and Novell product lines, as well as a number of peripheral and software networking products. She said the time had come to add more networking products to round-out the range, so as to cover all networking areas, such as PC to mainframe. The company is currently seeking distribution deals with a number of vendors. The move will bring MicroAustralia into direct competition with leading Australian networking distributor, Com Tech, which has built a solid reputation for providing both product and technical backup, with emphasis on dealer training (an area which MicroAustralia also considers important).

MicroAustralia has been responsible for introducing a number of new concepts to the Australian dealer channel last year. It has adopted the US concept of 'frequent buyer', where dealers are rewarded for purchasing across brands, not just within them. Also, it has introduced a radical dealer financing plan, where they get 90-day interest-free credit, which allows them to hold much higher stock levels than they could otherwise afford. MicroAustralia also has a stock swap-out scheme where dealers can afford to order stock knowing they can swap it out for different stock if it does not move as expected.

In 1991, 45 per cent of sales were hardware (compared to just 30 per cent in 1990), but due to the industry downturn, average dealer margins have dropped by five percentage points.

tivities proved to be a harrowing experience at times, but even with the problems which we had early on, we soon got used to having a network in the office.

Most of the software's early problems were with Windows – not really that surprising, Novell Netware didn't work with Windows either, until they released new versions of their workstation redirector software (which Novell insists on calling 'shells'). At the time of writing, we are still

experiencing trouble printing very large files from Windows, but Phil assures me that it will be fixed by the time you read this.

All the other early problems seem to have been ironed out now, and in fact MNS works better with Windows than a lot of other network systems on the market. MNS lets you run Windows on the (non-dedicated) server, a feat not possible with many other non-dedicated systems. Even DesqView can be run on the non-dedicated server, a feat not possible with LANtastic, even though the latter now works with Windows.

So what's the catch? For starters, the maximum size of the network is nine nodes (eight workstations, plus a single non-dedicated server). The single server might seem to be a bit of a limitation, but it makes for easier backups if shared files are stored in a central place, rather than being scattered around the place.

Nine workstations is enough for many small office situations, and other networking systems start to exhibit a noticeable drop in performance well before you reach their theoretical limit of nodes, and they also fail to mention the need for repeaters once you exceed the 30 workstation limit of a single thin Ethernet segment, so expanding these systems up to their theoretical maximum is easier said than done.

MNS also lacks an integrated network e-mail package, which you probably wouldn't need on a network that size anyway. The only other thing I can think of is lack of CD-ROM support.

Setting up the network involves plugging the network cards into each computer, and then cabling them together. The two-station starter kit contains a 10 metre cable, and cards for additional workstations come with a connector which is simply crimped onto the cable at the appropriate point (a small vise comes in handy for this).

Software installation consists simply of adding two commands to the autoexec.bat file of each computer – one to re-direct the server's hard drives (up to four) over the network, and the other to implement the print spooler. The DOS share command should also be loaded on the server, to implement file and record locking (for software which supports this).

Speed is not as high as Ethernet-based LANs, but it is more than adequate for most applications. The only time you really notice that the network is there is when searching large database files, or doing a file-find on a remote drive.

A two station starter kit is priced at \$495, which includes two interface cards, a

10m connecting cable, software, and a manual. Additional cards are available for \$245, including software license and cable connector. For more information, contact Program Development Systems, (03) 563 3063.

Recession fuels PC networking

NEWSBYTES REPORTS that regional repercussions of the worldwide economic recession, have spurred growth of the networking industry and facilitated corporate decisions to move from minicomputers to PC-based local area networks, according to Novell regional director Andrew Lai.

'When companies are squeezed financially, but still need to get work done, PC-based network computing is the way to work more effectively and efficiently. A LAN is a better solution and offers greater price/performance than a minicomputer,' Lai said.

Lai predicted that the coming year will see a continuation of the trend away from minicomputers as more and more companies implement LANs and the demand for networking explodes in Asia. 'People are coming to terms with the idea that a LAN is a viable solution, that it maximises the potential of a company's PCs, and effectively organises and controls information.'

While currently less than 10 per cent of the 3.5 million PCs installed in the region are networked together, Lai estimated that around 40 per cent of the PC installed base will be networked in three years' time.

Novell's average revenue growth rate in 1991 for the Asian region was over 50 per cent, with a 100 per cent growth in the installed base of Netware, Novell's LAN operating system. With an estimated 85 per cent share of the LAN operating systems market, Novell currently has more than 250,000 users in Asia with an average LAN having 12 to 13 nodes.

Where local area networks were once considered merely a workgrouping answer, they are now thought of as the answer for departmental and corporate-wide computing, according to Lai. He said this growing acceptance of network technology can be directly attributed to the dominance of PCs in the business computing environment and the growing maturity of the technology.

'Over the past few years, end users, vendors and resellers have all been absorbing a flood of knowledge about personal computing. The whole concept of personal

computing has begun soaking in, ushering in the next phase of growth in productivity through network computing,' Lai said. 'Users want PCs, and LANs are the most efficient method of tying those PCs into an effective, multi-user data processing system.'

Lai said network computing, as it develops, will involve the integration of local and wide area network technologies to provide business-wide connectivity in a multivendor environment. The growth of the network computing market would be driven by developments in network man-

agement, built-in communication, and the interoperability capabilities of LAN operating systems.

'While the LAN operating system will eventually display a plug-and-play type of user-friendliness, it is envisaged that all hardware will be LAN-ready to prepare for the explosive demand for networking,' Lai concluded.

Open Systems forum

COM TECH Communications is holding its Open Systems forum again this year -

specifically for people involved in local and wide-area PC networks. This year, it is to be held at the Sheraton Mirage Gold Coast resort, from Friday March 13th, to Sunday March 15th, with an optional fourth day on Monday.

The 1992 forum will feature international and local speakers from Novell, SCO, SymOptics, Lotus and Proteon. The event is highly technical in nature, and is open to people employed in a technical capacity in the networking field.

For more information, contact Com Tech, (02) 317 3088.

Primary electronic

collection points

National - Australian BBS Registry (047) 35 6362

ACT - Caught in the ACT BBS (06) 292 8040

NSW - 2000 & Beyond AliveBBS (02) 544 7123

Vic - Dr Blaze (03) 890 9323

Qld. - The Galaxy GateWay Computer System (07) 207 8900

SA - Oracle PC-Network (08) 234 0791

WA - 1990 Multiline (09) 370 3333

Tas. - Tassie DataBank (003) 44 9762

BBS Listing 9201

Mon 6 Jan 1992

New systems: 19

Unknown: 2

Temporarily Offline: 1

Permanently Offline: 13

Name Change: 6

Amended: 21

Total Systems Online: 681

NEW SYSTEMS

AUSTRALIAN CAPITAL

TERRITORY

FISH-NET

Sysop: Laurie Walkear

Phone: (06) 259 2533

FidoNet: 3:620/253

Baud: V.21 V.22 V.22bis V.32

Access: Mem Reg LVA

Computer: IBM Clone

DOS: MS-DOS

BBSSoftware: RemoteAccess

Point Packet

Sysop: Carl Makin

Phone: (06) 294 1632

FidoNet: 3:620/256

Baud: V.21 V.22 V.22bis

Access: Reg VA

Computer: IBM XT

DOS: MS-DOS

BBSSoftware: RemoteAccess

NEW SOUTH WALES

Adult BBS

Sysop: Phillip Watts

Phone: (02) 675 2324

Baud: V.21 V.22

Access: Mem Reg LVA

Computer: IBM XT Clone

DOS: MS-DOS

BBSSoftware: Rybbs

EBA

Sysop: Kim Ellis

Phone: (02) 412 4191

FidoNet: 3:711/913

Baud: V.22bis

Access: Mem Reg LVA

Computer: IBM PS/2 Model 60

DOS: MS-DOS

BBSSoftware: RemoteAccess

GraceLands BBS

Sysop: Gavin Shelford

Phone: (02) 772 1107

Baud: V.22bis

Access: Public

Computer: IBM AT Clone

DOS: Dr Dos

BBSSoftware: RemoteAccess

Silent Running

Sysop: Jim Caldwell

Phone: (02) 398 1703

FidoNet: 3:712/559

INTLnet: 58:2100/121

Baud: V.21 V.22 V.22bis V.23 V.32

PEP

Access: Mem Reg LVA

Computer: IBM 386 Clone

DOS: MS-DOS

BBSSoftware: RemoteAccess

The Kiwi Konektion

Sysop: Robert Earle

Phone: (02) 437 4350

Baud: V.21 V.22 V.22bis V.23

Access: Public

Computer: IBM 386sx Clone

DOS: MS-DOS

BBSSoftware: RemoteAccess

The PC Direct BBS

Sysop: Matthew Smith

Phone: (02) 906 7871

Baud: V.21 V.22 V.22bis

Access: Public

Computer: PC Direct 386sx

DOS: MS-DOS

BBSSoftware: GTPower

The SACS BBS

Sysop: Mark Vos

Phone: (02) 267 2459

Baud: V.21 V.22 V.22bis

Access: Public

Computer: IBM AT Clone

DOS: MS-DOS

BBSSoftware: GTPower

VICTORIA

AMIGA HOTLINE

Sysop: Darren King

Phone: (03) 558 4363

Baud: V.21 V.22 V.22bis

Access: Reg LVA

Computer: IBM AT Clone

DOS: MS-DOS

BBSSoftware: RemoteAccess

Compu-Talk BBS

Sysop: Ben Topp

Phone: (03) 379 2097

FidoNet: 3:633/352

Baud: V.21 V.22 V.22bis V.23

Access: Public

BBSSoftware: RemoteAccess

FLYiNG HiGH SBBS

Sysop: Stephen Pole

Phone: (03) 690 2954

FidoNet: 3:635/575

Baud: V.22 V.22bis

Access: Public

Computer: IBM AT Clone

DOS: MS-DOS

BBSSoftware: SuperBBS

Ground Zero BBS

Sysop: Mal Logan

Phone: (03) 314 9715

Baud: V.21 V.22 V.22bis

Access: LVA

Computer: IBM XT

DOS: MS-DOS

BBSSoftware: SuperBBS

Kattana Support BBS

Sysop: Andrew Whittle

Phone: (03) 470 5848

Baud: V.21 V.22 V.22bis V.23

Access: Public

BBSSoftware: RemoteAccess

QUEENSLAND

Immortal Justice BBS

Sysop: Ben Genn

Phone: (07) 209 6907

Baud: V.21 V.22 V.22bis

Access: Public

Computer: IBM Clone

DOS: MS-DOS

BBSSoftware: RemoteAccess+

SOUTH AUSTRALIA

Fred's BBS

Sysop: Randy Quick

Phone: (08) 341 5944

Baud: V.21 V.22 V.22bis V.23

Access: Reg VA

Computer: Amiga 500

DOS: AmigaDos

BBSSoftware: M A X's BBS

On Station BBS

Sysop: Dave Walsh

Phone: (086) 73 7630

FidoNet: 3:680/845

Baud: V.22 V.22bis

Access: Public

Computer: IBM 386/33 Clone

DOS: MS-DOS

BBSSoftware: RemoteAccess

Panther BBS

Sysop: David Overbeek

Phone: (08) 287 1528

FidoNet: 3:680/844

Baud: V.21 V.22 V.22bis

Access: LVA

Computer: IBM 386 Clone

DOS: MS-DOS

BBSSoftware: RemoteAccess

PC-ENDEAVOUR BBS

Sysop: Andy Hancock

Phone: (087) 23 0886

Baud: V.21 V.22 V.22bis V.23

Access: Public

Computer: IBM 386/33 Clone

Complete BBS Registry Listing

WE PUBLISH UPDATES – new systems and changes to the status of other systems – for the National BBS Listing every month. The complete listing is available for downloading from the primary electronic collection points in each state – it is about 600Kb uncompressed. If you would like a current complete listing without having to download it, send an IBM-formatted floppy disk to: BBS Listing, *Your Computer*, PO Box 199, Alexandria 2015 NSW. Registration of Bulletin Boards is only accepted electronically at the primary electronic collection points – please address all enquiries through them.

DOS: MS-DOS
BBSSoftware: Ultra BBS

UPDATES

AUSTRALIAN CAPITAL

TERRITORY

The Outpost

Status: Online
Sysop: Kieran Steele and Adam Rogers
Phone: (06) 259 1356
FidoNet: 3:620/261
Baud: V.21 V.22 V.22bis V.23 V.32
PEP
Access: Public
Computer: IBM 386sx Clone
DOS: MS-DOS
BBSSoftware: RemoteAccess

NEW SOUTH WALES

ADA Association

Status: Online
Sysop: Rudi Rolih
Phone: (02) 887 4281
Baud: V.22 V.22bis
Access: Mem VA
Computer: IBM AT Clone
DOS: PC DOS
BBSSoftware: Opus

All Amiga BBS

Status: Temporarily Offline
Note: Unavailable due to modem problems

Assorted C BBS

Sysop: Michael Butler
Phone: (02) 314 6932
FidoNet: 3:712/515
INTLnet: 58:200/181
Baud: V.21 V.22 V.22bis V.32 PEP
Access: Reg VA
Computer: IBM AT Clone
DOS: MS-DOS
BBSSoftware: RemoteAccess

Blade BBS

Sysop: Mark Stephens
Phone: (02) 957 3050
Baud: V.21 V.22 V.22bis
Access: Public

Computer: IBM 386 Clone
DOS: MS-DOS
BBSSoftware: RemoteAccess

Borland BBS

Sysop: Mark Pountly
Phone: (02) 953 9630
Baud: V.21 V.22 V.22bis V.23
Access: Public
Computer: IBM AT Clone
DOS: MS-DOS
BBSSoftware: TBBS

Dense Mist BBS

Status: Permanently Offline

Enigma Paradox

Status: Permanently Offline

Flightcomm Information Service

Sysop: Ian Larkin
Phone: (042) 26 6733
Baud: V.22 V.22bis
Access: Public
Computer: IBM 386 Clone
DOS: MS-DOS

Freedom BBS

Note: Now called The Realms BBS

NorthWall BBS

Status: Permanently Offline

Nowra BBS

Status: Permanently Offline

Splash BBS

Sysop: Rosalyn Anderson
Phone: (02) 954 1491
FidoNet: 3:712/618
INTLnet: 58:2100/146
Baud: V.21 V.22 V.22bis PEP
Access: Mem Reg LVA
Computer: IBM 386 Clone
DOS: MS-DOS
BBSSoftware: RemoteAccess+

Tech Pacific BBS

Sysop: Dominic Halpin
Phone: (02) 662 4663
Baud: V.21 V.22 V.22bis V.23
Access: Mem
Computer: IBM AT Clone
DOS: MS-DOS
BBSSoftware: The Major BBS

The Arcade Parlour

Status: Permanently Offline

The Bad Influence BBS

Status: Permanently Offline

The Kootingal BBS

Status: Online
Sysop: Tony Prichard
Phone: (067) 67 3018
GTNet: 302/009
Baud: V.21 V.22 V.22bis
Access: Reg VA
Hours: Daily: 0900 – 0700
Computer: IBM XT Clone
DOS: MS-DOS
BBSSoftware: GTPower

The Night Rider

Sysop: Geoff Stanley
Phone: (02) 570 4242
Baud: V.22 V.22bis V.32
Access: Public
Computer: IBM AT Clone
DOS: MS-DOS
BBSSoftware: TeleGard

The Oops BBS

Status: Permanently Offline

The Realms BBS

Sysop: Mario Marin
Phone: (02) 602 5752
Baud: V.21 V.22 V.22bis V.32
Access: Reg
Computer: Amiga 2000
DOS: AmigaDos
BBSSoftware: M A X's BBS

The Singing Wire BBS

Sysop: Mick Shaw
Phone: (047) 54 4113
FidoNet: 3:713/810
Baud: V.22 V.22bis V.23 V.32
Access: Mem Reg
Computer: Amiga 500
DOS: AmigaDOS
BBSSoftware: Star-Net

The Software Zone BBS

Status: Unknown

Westcom BBS

Sysop: Russell Cook
Phone: (047) 21 2925
FidoNet: 3:713/801
INTLnet: 58:2100/801
Baud: V.22 V.22bis V.32
Access: Public
Computer: IBM 386/40 Clone
DOS: MS-DOS
BBSSoftware: RemoteAccess

Weston Computer Networks Support BBS

Status: Permanently Offline

Wollongong Amiga BBS

Status: Permanently Offline

VICTORIA

Communication Maximus

Note: Now called Spectrum Anarchy

ComZtel

Sysop: Maurice Copeland
Phone: (057) 84 2155
Baud: V.21 V.22 V.22bis V.23 V.32
Access: Reg LVA
Hours: Weekdays: 1800 – 0800
Weekends: 24 Hours
Computer: IBM 386sx Clone
DOS: MS-DOS

BBSSoftware: TPBoard

EasyAccess BBS!

Sysop: Garry Gillard
Phone: (03) 585 0495
FidoNet: 3:636/200
Baud: V.22 V.22bis V.32 V.32bis
Access: Public
Computer: IBM 386
DOS: MS-DOS
BBSSoftware: Ezycom!

Genesis BBS

Status: Permanently Offline

Hitch-Hikers Guide to the Galaxy

Sysop: Wayne Burnside and Mark Kampmann
Phone: (03) 546 3038
FidoNet: 3:636/204
Baud: V.21 V.22 V.22bis V.23 V.32
Access: Public
BBSSoftware: EasyComm

ICe! BoX

Sysop: Eugene Mok
Phone: (03) 562 7519
FidoNet: 3:633/160
Baud: V.21 V.22 V.22bis V.23 V.32
V.32bis
Access: Mem Reg LVA
Computer: IBM 386/33 Clone
DOS: MS-DOS
BBSSoftware: RemoteAccess+

Outback

Note: Now called Main Frame

SCAN AUSTRALIA BBS

– Line #1

Status: Permanently Offline

Spectrum Anarchy

Sysop: Nick Brennan
Phone: (03) 563 6830
FidoNet: 3:634/382
Baud: V.21 V.22 V.22bis PEP
Access: Public
Computer: IBM AT
DOS: MS-DOS
BBSSoftware: Maximus

Sunrise BBS

Status: Online
Sysop: Tim Epstein
Phone: (03) 596 5403
FidoNet: 3:634/394
Baud: V.22 V.22bis
Access: Reg LVA
Hours: Daily: 2200 – 0800
Computer: IBM AT clone
DOS: MS-DOS
BBSSoftware: RemoteAccess

The ARCHIVE BBS

Sysop: David Hilbig
Phone: (03) 752 5527
FidoNet: 3:633/210
Baud: V.21 V.22 V.22bis V.23
Access: Public
Computer: IBM AT Clone
DOS: MS-DOS
BBSSoftware: RemoteAccess

The Enterprise

Status: Online
Sysop: Andrew Seeger
Phone: (03) 752 0109
FidoNet: 3:633/158
Baud: V.21 V.22 V.22bis V.23

Interesting boards

IF YOU RUN a BBS which you think is particularly interesting, or covers a specific interest area (especially those not related to computers), please drop me a line, via snail mail, or one of the addresses below.

— Mark Cheeseman
Fido: 3:712/505.15

ACSnets: ycomputr@runxtsa.runx.oz.au

Basic BBS

THE BASIC BBS is not a basic bulletin board, but a BBS which caters specifically for Basic programmers. Although many programmers thumb their nose at Basic,



the fact remains that it is undoubtedly one of the most widely-used programming languages, and with the emergence of compilers like Borland's Turbo Basic, and Microsoft QuickBasic, it is a lot more powerful than the ROM Basic which most of us cut our teeth on back in the 'good ol' days' of TRS-80s and Apple IIs. With Visual Basic for Windows programming, Basic is far from dead, and is all many people need in a programming language.

Available files include libraries for QuickBasic, hints and code for accessing foreign file formats from within Basic

programs, and information on generating sound and graphics with QuickBasic.

In addition to local help-type areas for DOS and Basic questions, a wide range of national and international Echomail areas exists covering programming for DOS (batch files), dBase, and of course, QuickBasic. The sysops promise to try and help people who post questions in the local help areas, and if they can't help, suggest where to look for help.

The Basic BBS is a public-access board, and users have full message and file privileges from their first call, and there are no user charges for the board (although the sysops welcome donations of course).

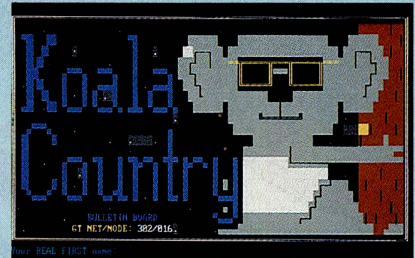
Sysops: Chris Hill and Scott Robertson
Phone: (09) 314 1895

Max baud: 2400

Koala country

IF YOU'VE NEVER dialled up a GT Power bulletin board, then you're missing out on a lot of interesting conferences. Most GT boards are part of GT Net — a network similar to, but separate from, FidoNet. I guess this is a result of different file formats for messages between GT Power and other BBS software, but it means that there is a wealth of interesting conferences to participate in, which you'll never see on FidoNet systems.

Koala Country has 117 message areas, pretty much covering life, the universe, and everything. Aside from four local areas (including a rather impressive ANSI art gallery, where budding computer artists can display their creations), and the usual NetMail area, the rest of the message areas are either national or international GT Net conferences.



Computer-related areas include support for GT sysops, local-area networks, CD-ROMs and multimedia, desktop publishing, CAD, and discussions related to various shareware packages. Programmers from the Basic, C, Pascal, Clipper and other camps are also catered for.

And for those times when you just want to forget about computers and software, there's a wealth of message areas covering theatre, music, movies, astronomy, languages, adventure sports, sci-fi, parenting, aviation, chess, snow skiing, photography, and a whole host more.

In order to maintain a flow of new files for download, Koala Country enforces a download:upload ratio of 20:1 after your first megabyte of downloads. I've never been convinced of the worth of these limits — I think it encourages people to upload any old rubbish if they can't find anything worthwhile to upload. But many sysops think otherwise, so I guess if they're willing to check through the uploads to weed out the junk, it at least guarantees some uploads from everybody.

Sysop: Warren Leadbeatter
Phone: (02) 622-3668

Max baud: 9600 (V.32)

Access: LVA
Computer: IBM XT Clone
DOS: MS-DOS
BBSoftware: RemoteAccess

QUEENSLAND

Access North Queensland
Note: Now called Community Information Service — Cairns

C&O Systems
Sysop: Daniel Churchman
Phone: (07) 261 2481
FidoNet: 3:640/777
Baud: V.21 V.22 V.22bis V.32
Access: Reg LVA
Computer: IBM Clone
DOS: MS-DOS
BBSoftware: QuickBBS

Commodore Computer Users
Group Qld
Sysop: Richard Carde

Phone: (07) 300 6356
FidoNet: 3:640/304
Baud: V.21 V.22 V.22bis V.23 V.32
Access: Mem Reg LVA
Computer: Amiga 2000
DOS: AmigaDOS
BBSoftware: Star-Net

Community Information Service — Cairns

Sysop: Clemens Vermeulen
Phone: (070) 51 0566
Baud: V.21 V.22 V.22bis V.23
Access: Reg LVA
Computer: IBM XT Clone
DOS: MS-DOS
BBSoftware: RemoteAccess

Dove System
Note: Now called C&O Systems

LANAI
Status: Unknown

The Strange Wanderer
Status: Permanently Offline

SOUTH AUSTRALIA

Alternate Reality
Status: Online
Sysop: Robin Hansen
Phone: (08) 254 8483
FidoNet: 3:681/872
Baud: V.22bis
Access: Public
Hours: Daily: 1900 — 0700
Computer: IBM AT Clone
DOS: MS-DOS
BBSoftware: RemoteAccess


The Realm V
Status: Online
Sysop: Matt Rubinstein
Phone: (08) 374 0462
Baud: V.21 V.22 V.22bis V.23 V.32
Access: Public
Computer: Acorn Archimedes
DOS: RISCOS
BBSoftware: Custom

WESTERN AUSTRALIA

Red Back BBS
Sysop: Peter Dane
Phone: (09) 307 6189
FidoNet: 3:691/122
Baud: V.21 V.22 V.22bis V.23
Access: Public
Computer: IBM AT Clone
DOS: MS-DOS
BBSoftware: RemoteAccess

tcpBBS
Sysop: Tony Salmeri
Phone: (09) 331 1695
Baud: V.21 V.22 V.22bis V.23
Access: Reg LVA
Computer: IBM AT Clone
DOS: MS-DOS
BBSoftware: TurboBBS

The TurboBBS
Note: Now called tcpBBS
ToricBBSAmiga
Status: Permanently Offline



THE CD-ROM REVOLUTION SPEEDS UP

CD-ROM technology is paving the way for multimedia on PCs, as well as offering the ideal medium for software distribution. Mark Cheeseman discusses what's available now, and what to expect in the near future.

THE COMPACT disc was developed by Philips over ten years ago, primarily as a medium for the distribution of music – in place of the vinyl disc. The CD, less than half the size of the old LP which it replaced, could store almost twice as much music as its vinyl forebear. Moreover, with its digital recording system, its quality far surpassed any existing consumer music medium (although some diehards still insist that an LP sounds 'better'), and meant that the

humble CD could also be used for storage of other digital information.

CD-ROM, so named because it's based on the audio compact disc, and is read-only, appeared on the scene a couple of years later, and has so far failed to repeat the success of its elder sibling. The reason for this is quite simple – cost. Until about six months ago, a CD-ROM drive and controller for a PC would set you back well over a thousand dollars. And that was for a cheap one.

Now that several suppliers are shipping drives (with controllers) below the magic \$1000 barrier, you can expect them to start catching on. Mind you, I still think they've got a long way to fall yet – you can pick up an audio player for less than \$300 these days, and I have yet to hear an adequate explanation of why a CD-ROM drive has to cost much more than an audio player.

The other variable in the equation is of course software. Nobody is going to shell out their hard-earned cash for a drive, if



they can't get any useful discs to put in it. Other types of drives for computers don't have this problem – since they can read and write disks in the drive, users can create their own disks, as long as they can get blanks. Not so with CD-ROM. Despite wild claims from Tandy Corporation around four years ago, nobody has yet developed a read/write CD. There has to be a ready supply of software before anybody is going to buy a drive.

The software situation has been steadily improving over the last two or three years, with a wealth of available titles covering everything from games to shareware collections to public databases to commercial software. The possibilities are endless – being able to store over 500Mb of data in a readily-accessible form has thrust it further into the information age than ever before.

One of the areas where CD-ROMs first caught on was in distributing specialised databases to professionals. Here was an application which went beyond the gimmick stage, allowing people to have a whole library of reference material literally at their fingertips, able to be searched more rapidly and accurately than ever before.

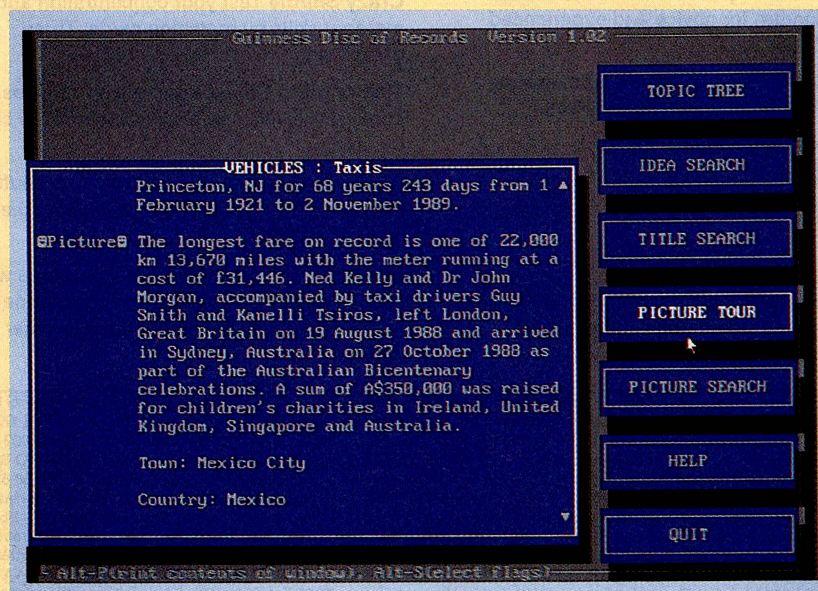
For example, Light Years Ahead, (02) 477 6666, distributes a disc of over 70,000 gas and liquid chromatography abstracts covering 31 years of research. Not exactly material for the international best-sellers list, but it gives you some idea of the level of specialisation which exists in the range of available discs. And rather than needing days to search thousands of books, a typical search on this disc takes 30 seconds.

But now that drives have dropped so much in price, more and more less specialised software is starting to appear. Traditional reference works such as dictionaries, encyclopedias and atlases are now available on CD-ROM, and you can expect more and more to appear all the time.

And there's still the more unusual options, like a disc about international terrorist organisations, presumably to enable



The Guinness Disc of Records is, as you might expect, a digitised version of the well-known book. Due to the limitations of most PC screens, displaying a picture and a lot of text at the same time is not possible, but it's easy to switch between the two. From Light Years Ahead, \$248.



\$5* Shareware

Over 2000 titles!

PC-SIG, the world's most respected Shareware Library, is now available around Australia at just \$5 per disk - either 5.25" or 3.5" (Plus \$10 per order handling if applicable)

You can select from this list or obtain your own copy of our catalogue. The catalogue is so complete it is known as The Encyclopedia of Shareware. Its 700 pages are crammed with full descriptions of over 2000 Shareware titles in the PC-SIG Library. And you can subscribe to Shareware Magazine, a 60 page colour magazine devoted to Shareware. Call into one of the addresses below or order by phone, fax or mail - each disk is still only \$5, either 5.25 or 3.5 (plus \$10 handling and freight if we need to send the order to you). If you order the introductory pack, which includes the Encyclopedia and a subscription to Shareware Magazine we'll include a coupon which will entitle you to **FOUR FREE DISKS** with your orders over the next twelve months. Plus you'll make extra savings if you register Shareware through us.

* Please remember that Shareware requires additional payment to authors if found useful. In other words Shareware is the try-before-you-buy way of purchasing software. Try a Shareware product for \$5 a disk - if you wish to continue using the product you are required to register. Registration prices vary from product to product and each trial disk gives full registration details. To make registration easy for you we handle registrations and provide support for over 100 of the most popular products. Shareware is the no risk way to purchase software.

Applications

AsEasyAs. Shareware's most popular spreadsheet. Reads and writes 1-2-3 files and runs macros. #751

File Express New faster version with inbuilt word processing. Ideal for mailing lists and all database applications. # 287, 288, 2555, 2672 (4 Disks).

Quikmenu Easy to set up menu with great graphics. Can use mouse or keyboard. #2361

Galaxy Lite Easy to use word processor - ideal for assignments. Pull down menus or commands. #2318

Cheque It Out Complete double entry cheque book manager with trial balance and general ledger. #1559, 1560 (2 disks)

ExpressCheck Compare your expenses to budgets. Very easy to use and widely recommended by accountants. #1057

FormGen Like a word processor with graphics features for creating forms. #1561

FormGen Fill Works with FormGen and allows you to fill in details in a form. Great for small business invoicing. #2328

Draft Choice A powerful fast object based CAD program for novice and experienced user #1760

ON-Side Prints wide reports on their side. Ideal with large spreadsheets. #1184

A-Lite A light version of AsEasyAs ideal for PCs with as little as 256K memory. Great introduction to spreadsheets. #2557

Publishers

Grin Graphics Over 150 humorous graphics in PCX format to use with suitable DTP programs. #2803, 2804 (2 Disks)

Print Partner Creates banners posters and calendars just like Print Shop. Highly recommended. #2660

Vuimage Lets you display or print .GIF and .TIFF graphics files. OK on CGA to VGA and Herc cards. Automatic scaling to screen and printer #2585

Utilities

4DOS A replacement for Command.Com with enhanced and 40 additional commands. #1773

BOOT.SYS Allows you to choose the configuration you wish to run each time you boot. Great if you're short of memory. #2547

Entertainment

Hugo's House of Horrors Hours of entertainment finding your way through haunted halls to save your sweetheart. #2150

Commander Keen Fast graphics (EGA/VGA) and superb sound effects make this one of the best arcade games available #2505

Duke Nukem. The followup to Commander Keen with superb graphics, sound effects, joy stick support, hint mode & more. #2677

Crazy Shuffle Test your concentration and memory skills by matching cards. Three games with five skill levels. #2014

Mahjong Old Chinese game with 136 tiles. Three skill levels mean that all the family can try. #641

PC Jig-saw Puzzle. Shows a picture, shuffles the pieces then you have to reconstruct the picture. #1558

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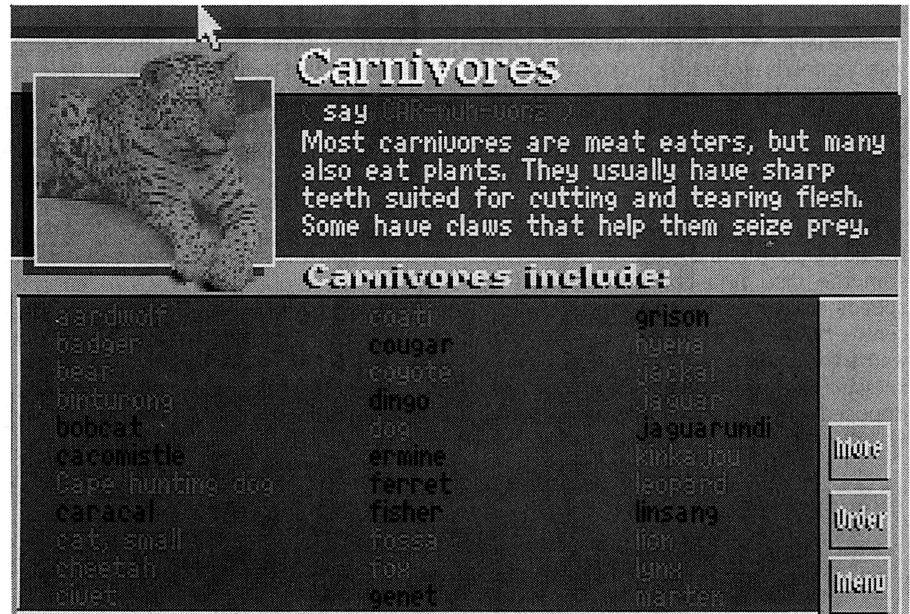
budding terrorists to get in touch with like minded individuals (\$189 from Peripherals International, (03) 894 4000, which also distributes About Cows (\$54) for the less war-like; and the GenStar 2000 CD-ROM drive for \$899, including interface). Or the well-known Australia on Disc – a phone directory of Australia, that can be searched by name, address or phone number, or a combination of the three.

Now that the average PC has reasonable graphics capabilities, discs can mix text and pictures, like an ordinary 'paper' book. And CD-ROM can go much further than any book ever could, integrating text, graphics, animation and sound – true multimedia.

Multimedia and CD-ROMs are inextricably linked – graphics, sound, and even simple animation make enormous demands for storage space, and no other medium (except possibly for video laser discs, which can't store data) comes close to offering what is needed.

Because of the multimedia applications of CD-ROMs, drives have audio output jacks on the rear, and/or a headphone socket on the front of the drive. This allows sound to be played under the control of the application, and some drives come with software that reproduces ordinary audio CD controls on the screen, allowing you to play audio discs when you aren't using the drive for anything else.

While some multimedia applications use the CD drive for producing sounds, the other approach is to use a sound card in the host PC, usually an Ad Lib or SoundBlaster card. This means that sounds can



'Mammals' is a multimedia encyclopedia from National Geographic, containing information, images and sounds of hundreds of mammals. Available from Pelham, (02) 980 6988, \$200.

be generated 'on the fly', rather than being pre-recorded as they are when they come straight from the disc. In fact, if you stick some multimedia discs into an audio CD player, you can play the audio tracks. Be very careful if you try this – if the player tries to play the data tracks (most audio CD players don't seem to be fussy about what they play), you'll most likely fry your speakers, so turn the volume down! Check the applications you're intending to run –

you might find that you need a sound card to make the most of the multimedia software. The new SoundBlaster Pro is compatible with the emerging multimedia sound standards, so this is probably a good card to get if you have a choice (\$399 from Computamart, (09) 242 5277, or Dick Smith stores).

One of the big limitations of CD-ROMs has been their rather slow access time and low data transfer rate. The technology was

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This ad was created on the LaserMaster LM1200 A3 Typesetter

designed for playing music more-or-less sequentially. A couple of seconds delay was perfectly tolerable in locating the beginning of a desired track on a music disc, but it's pathetically slow for computer users who have become accustomed to access times in the order of tens of milliseconds.

The delay is to some extent intrinsic to the design of the disc – the drive does not spin the disc at a constant speed, but speeds up as the head approaches the centre of the disc, and slows down towards the outer edge. This mechanism is known as constant linear velocity (CLV), as opposed to constant angular velocity

(CAV) used by PC floppy and hard disks.

Constant linear velocity is used because it allows a disc to hold more data than is possible with CAV. With the latter, the amount of data that can be stored on any track on the disc is limited by the capacity of track closest to the centre of the disc. Outer tracks, although they are longer, cannot store any more data, since the data comes from the controller at a constant rate.

This is why, when formatting a double density 5.25-inch disk as a high density one, the outer tracks usually format OK, but errors start becoming more frequent as the format routine gets to the inner

tracks. The outer tracks are normally used far below their capacity, but the inner ones have less margin for error. This is also why floppy disks have track 0 (the most critical track) as the outer track.

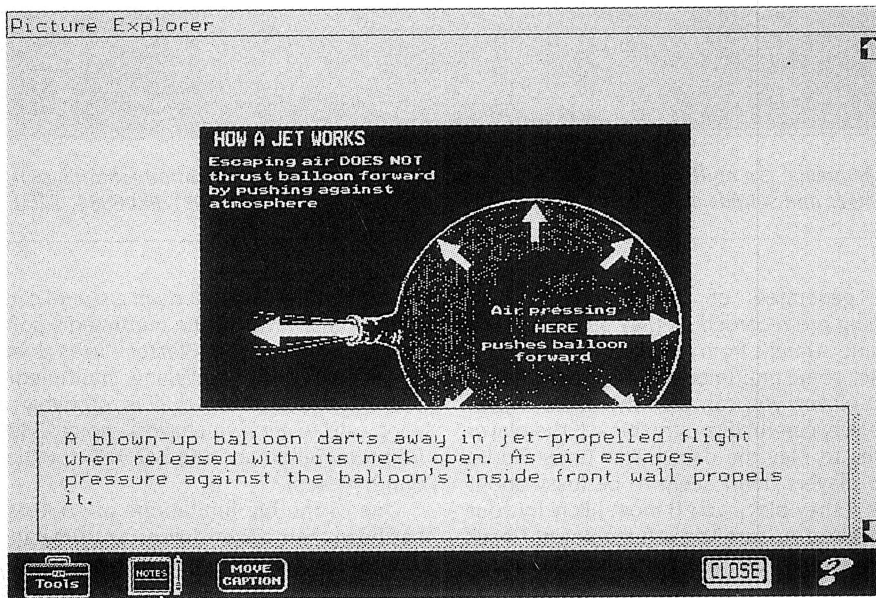
By slowing the disc down as the head moves out from the centre, more data is written in the time the disc takes to rotate, and all this extra capacity is put to good use. Also, it means that much more of the disc's surface can be used, since the head can go a lot closer to the hub of the disc without errors. (For the trivia buffs – CDs play from the centre of the disc moving outward.)

CD-ROM drives typically make use of disc caddies to hold the disc in the drive. I don't know why things evolved this way, but I prefer the sliding drawer system used in audio CD players. Caddies are a hassle when it comes to changing discs. You either need to have a separate caddy for each and every disc you have, or swap discs in and out of one or two caddies, which increases the risk of scratching the discs.

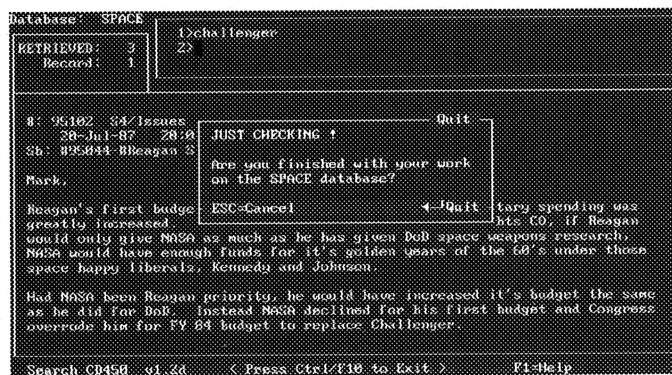
Also, there are at least three different caddy designs, so if you want to share discs between two different brand drives, you may find that you need to move discs from one caddy to the other repeatedly. Granted, a disc in a caddy doesn't need to be put in a box when you remove it from the drive, but that's a small benefit.

In order to be able to read a CD-ROM, an MS-DOS-based computer needs to have special drivers loaded. These come in two parts – the first being a device driver loaded in the config.sys file, which is the normal way to support non-standard devices under DOS.

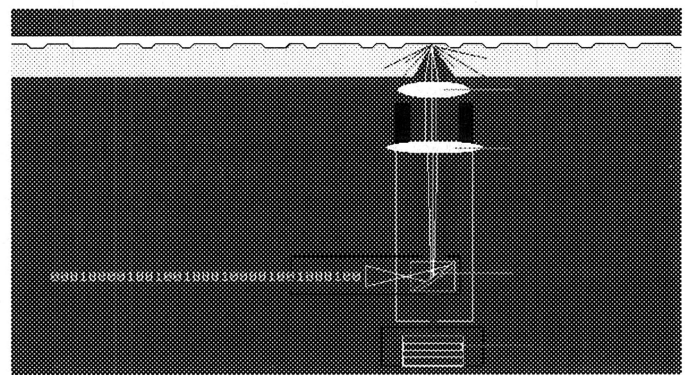
However, that's only half the story. Even with the driver loaded, a CD-ROM has much more capacity than DOS was capa-



Compton's Multimedia Encyclopedia is an example of what's possible with multimedia and CD-ROMs. Alas, the graphics can't take advantage of the current crop of SuperVGA cards, but then that applies to most discs at the moment. From Light Years Ahead, \$1049.

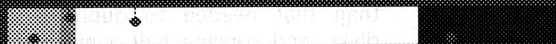


The result of a typical database search on a CD-ROM. This is one of the example databases on the CD-ROM sampler disc, available from Light Years Ahead, (02) 477 6666, \$59.



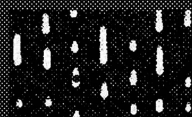
CD-ROMs use a laser beam reflected from the surface of the disc to read the data. A photocell converts the reflected light to a binary data stream. (Also from the CD-ROM sampler.)

Physical Data Format

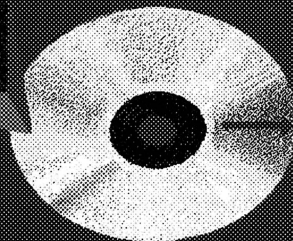


Over 10 per cent of each data block on a CD-ROM is devoted to error-correction data, to ensure data integrity. (Also from the CD-ROM sampler.)

Pit
Land



16,000 tracks
per inch



A compact disc has a single spiral track, with the data stored as pits and lands. The tracks are spaced at about 16,000 per inch – 118 times the track density of a 3.5-inch floppy disk.

ble of handling at the time that CD-ROMs started to appear – it was still shackled to the 32Mb limit of DOS 3.x.

Microsoft developed the Microsoft CD Extensions (MSCDEX), which interface the CD-ROM device driver to DOS. Rather than making the drive appear as a physical device, Microsoft chose to make the CD-ROM drive appear as a logical network drive.

This hides the physical parameters of the drive from DOS, as though it were a drive on a remote file server.

The required device driver and the CD Extensions are usually packaged with the drive and controller card, so you don't have to worry about tracking them down separately.

CD-ROM drives can be either mounted

internally, in a half-height drive bay, or externally, in a separate box with its own power supply. Which configuration you choose depends on a number of factors.

First of all, an internal drive needs a vacant drive bay to be mounted in. Large-footprint desktop enclosures and towers generally have a spare bay or two, especially now that most hard disks can be

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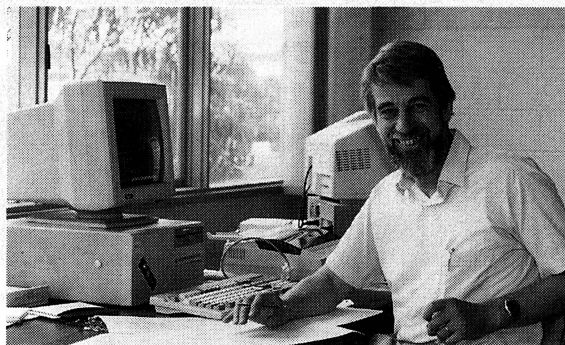
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mounted in a way which leaves a drive bay free.

Also, the machine needs to have enough reserve power supply capacity. This is harder to determine, since it depends on the power capacity of the supply, and how many expansion cards and extra drives are already in the machine. Generally, if there is a spare bay or two, and you haven't stuffed the expansion bus full of big, power-hungry cards, you're probably safe.

I generally prefer to mount any disk drives inside the computer whenever possible, for a number of reasons. Most obviously is the space saving of not having another box on the desktop. Also, because the wiring between the controller and drive is contained fully within the computer enclosure, there is virtually no chance of the cable coming adrift at some stage, which usually results in much cursing until the culprit is found. It's also one less power outlet that you need to have free on the ubiquitous power board. Finally, internal drives are invariably cheaper, since you're not paying for a power supply and enclosure as well.

Software

AT THE MOMENT, software distributed on CD-ROM is generally the sort of material which would be impractical to distribute on lesser-capacity media, like floppy disks. High-capacity removable media, such as those evaluated elsewhere in this issue of the magazine, are out of the question due to lack of standardisation on a particular hardware format.

Distribution on tape is equally unviable. There are too many different tape formats in use, and tape is not a random-access medium, so any software distributed on tape would need to be restored onto a hard disk before use. Applications on CD-

ROM are run from the very disc they are distributed on, so no space needs to be allocated on the hard disk, except perhaps for a few files for which access time is critical. When you have finished with an application, pull the disc out of the drive, and put in the next.

Also, CD-ROMs can be mass-produced easier than any magnetic medium – pro-

duced as they are by a stamping process similar to that used for years for vinyl LPs.

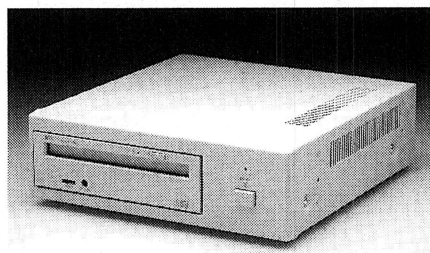
CD-ROMs also have another advantage for the software distributor – protection from piracy. The capital investment required to produce CDs is much higher than that needed to duplicate floppy disks, and copying half a gigabyte onto floppies is out of the question, and even if somebody did try it, software which expects to find all its files on the same disc (the CD-ROM) are hardly likely to be tolerant of files being spread over hundreds of disks. And not many people have a 500Mb hard disk in their PC (yet).

In the near future, we're going to see more and more 'ordinary' software distributed on CD-ROM. Corel Systems is already distributing a CD-ROM version of Corel Draw. Instead of taking up eight or nine high-density disks, it all fits neatly on a single CD-ROM with plenty of room to spare. This spare room has been put to good use, with over 10,000 uncompressed clipart images, and both Windows and OS/2 versions of the program.

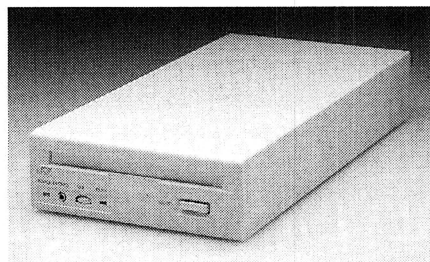
This is typical of the sort of software distribution we can expect in the near future. IBM is expected to ship OS/2 on CD-ROM, as well as more conventional floppies. This form of distribution would allow a complete set of video and printer drivers, and possibly some shareware and public-domain applications to be distributed with the operating system, making it a true plug-and-play solution.

CD-ROMs also lend themselves to use on networks, where a central pool of CD-ROM drives, or a jukebox (a drive which can automatically change discs, like its musical namesake), can be shared among several users. Like any copyright material on a network, this raises the issue of site licensing.

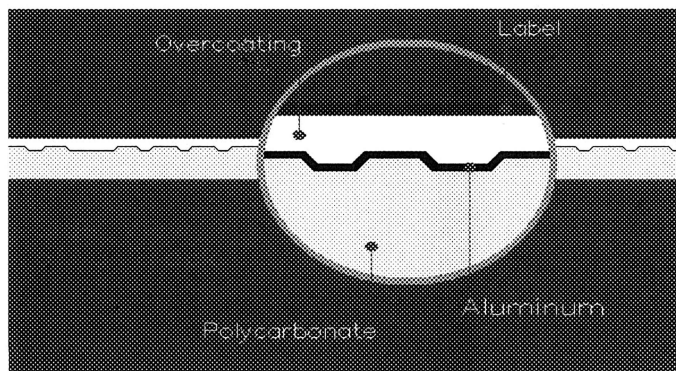
Many discs specifically state that they cannot be used by more than one person



Although external differences are minimal, NEC's new CD-ROM (approximately \$1260) is faster than previous models, making it suitable for multimedia applications. Contact NEC, (02) 868 1811, for further details.



This drive, from ACS Computer, (03) 427 7657, is the smallest external drive we've seen yet, and is just the right size to sit on top of a tower enclosure, if desktop space is tight. It's also got the lowest price we've seen: \$695 includes the interface kit and two CDs.



Another diagram from the CD Sampler, showing a cross-section through a compact disc.



This is the control panel of the Music Box, which comes with the NEC drive and allows you to play audio discs on the drive.

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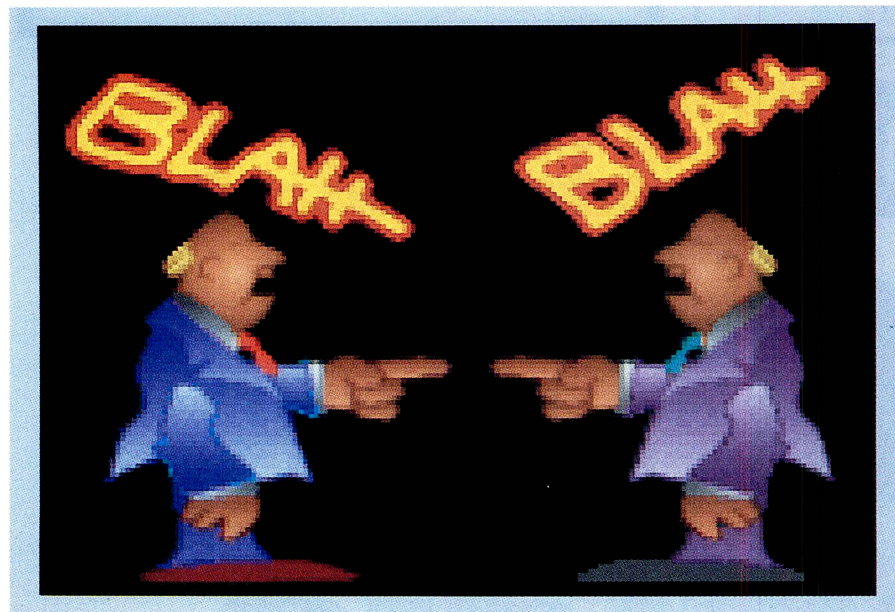
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Picture quality of Mammals is quite good, although resolution is limited to the standard 256 colour VGA resolution of 320 x 200 pixels. There's no sound icon for the koala – what noise does a koala make anyhow?



One of the animation sequences from the VGA Spectrum disc. Alas, the printed medium does not do justice to the demonstration. Other examples on the disc include a Harrier Jet taking off, and the infamous MiG-29 crash at the 1989 Paris Air Show. This disc contains literally hundreds of animation sequences, colour GIF files (which can be converted to Windows wallpaper's BMP format with Graphics Workshop, also on the disc), and clipart images. There's also sound files for users of the SoundBlaster card. From Light Years Ahead, \$149.

at a time. In the case of discs of reference material, I think this is a bit like saying two people can't use different volumes of an encyclopedia at the same time.

CD-ROMs are also proving to be a popular way of distributing public domain software and shareware. Aside from the sheer volume that can be stored on a single

disc, a CD-ROM is inherently virus-proof (provided the original software is clean before it is copied onto the master). Discs available include PC SIG (\$495 for non-commercial use from Manacomm, (07) 368 2366), PC-Blue, and Winware (a Windows 3.0 collection, \$159, from Light Years Ahead). These discs are popular among BBS sysops, as they offer an economical way of putting a lot of software on-line in one hit.



The new Hitachi drive is somewhat smaller and faster than its predecessor. Unlike most other drives, the Hitachi uses its own proprietary cable between drive and controller, rather than the more usual SCSI (\$1290 from Hitachi, (03) 555 8722).

One of the most interesting shareware discs is one called RBBS in a Box (\$249 from Peripheral International). This has a copy of the RBBS bulletin board software, as well as an extensive PD and shareware collection, to get a bulletin board up and running in one evening.

The future

WE'RE ONLY scratching the surface of the possible applications for CD-ROMs. As multimedia standards evolve, and appropriate extensions are built into system software, CD-ROMs are going to be applied to more and more applications, such as training, education, media and others.

And expect to see drives shrink in size even further – just look at the size of the latest portable Walkman-type audio players. With a drive this size, CD-ROMs will prove an ideal way for people in the field to carry large amounts of data around, perhaps somebody will build a CD-ROM drive into a laptop.

As more and more discs reach the market, and as more software publishers start to distribute applications on CD-ROM, you can expect drive prices to fall even further. It's been a long time coming, but the CD-ROM revolution finally seems to be picking up speed. □

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MEMORIES ARE MADE OF THIS

Confused by the jargon associated with memory? Stewart Fist clarifies the terminology and concepts involved.

THERE'S PROBABLY nothing that confuses a first-time computer user more than the concept of 'memory'. The word seems to be used in so many different ways – and the industry's acronymia doesn't help much either.

Yet, just as 'Mama' and 'Dada' seem to be the first sounds a child learns, for some mysterious reason 'RAM' and 'ROM' are usually the first tricky technical terms to trickle off a tyro's tongue. Most newcomers to computing can tell you that these acro-oddities mean 'Random Access Memory' and 'Read-Only Memory'. But generally, this is where their understanding stops.

And who can blame them? Over the years we have grouped together a large

number of un-alike functions under a single term 'memory' – and each of the terms involves concepts that are quite alien to people without a computing background. Then from each of these terms we have derived variations – so ROM has become PROM, EPROM, then EEPROM, while RAM devolves to SRAM, DRAM and FRAM.

So let's attempt to unravel the terminological and conceptual mess. And when a subject is this complex, it helps to create some categories. So here are some definitions of the term 'memory' sub-divided according to the purpose to which the memory is put:

□ The working memory inside a computer where the operating instructions (system) and programs (applications) generally re-

side while they are in the process of being used (ROM, RAM and sometimes virtual memory on disk). This is usually called primary memory, system memory, or main memory.

□ The input-output memory devices (or partitions of other memory) which handle the problems of different data-rates between the computer's internal chips and its external peripherals. (I/O buffers, disk-cache, video memory and RAM disk).

□ The temporary store for pre-fetched instructions, data, locations which will be directly accessed by the CPU. This can be inside the processing chips of a micro-computer (high-speed internal cache) or as a special area of high-speed memory cache outside the CPU. We should categorise the CPU's own internal registers here also.

□ The long-term storage (record and replay) of data files for later reference, record purposes and archiving (magnetic floppies and hard disks, tape and DAT, optical recording systems, punched cards

and tape, bubble memory, and sometimes battery-backed RAM).

□ The provision of unmodifiable reference material, operating systems, programs and so on, supplied by a third-party (CD-ROM, floppies, tapes, ROM cartridges).

This is one way of categorising memory – according to the five main functions it performs. But another way would be by reference to the underlying technologies:

□ ROM, and the related technologies of PROM, EPROM, EEPROM.

□ RAM chips and their subcategories of SRAM, DRAM and now FRAM.

□ Punched paper (write once) technologies.

□ Magnetic reversible media – disks, tapes and bubble memory.

□ Optical reversible media – magneto-optical, phase-change or polymer.

□ Optical WORM (write once).

□ Optical replay only – CD-ROM, CD-I and so on.

Then there are the fundamental semiconductor materials used in the construction of memory chips – mainly silicon. But in future we will see GaAs (Gallium Arsenide) which is about seven times faster than silicon, but more expensive to make and difficult to fabricate. There'll be other exotic materials as well.

Volatile and non-volatile memory

YOU WILL NOTICE that, until now, I have avoided mention of the words most commonly used to describe memory – 'volatile' and 'non-volatile' – because these terms create more than enough confusion already. The current distinctions between the two semi-conductor families of memory (RAM and ROM) are changing rapidly in terms of 'volatility', anyway, and this is what we are going to look at in this article.

The term 'non-volatile' was originally only applied to semi-conductor ROM and magnetic recording media because they retained memory even when the power was switched off. RAM was said to be 'volatile' because the memory disappeared the instant you hit the power or reset switch. Lately, the term non-volatile has been applied to volatile forms with battery-backup (specifically SRAM), but this just confuses the issue.

In the early days of microcomputers, RAM came in 8Kb increments, with eight chips (each supplying only one bit to a byte) to each memory bank. In these dark ages, most of us bought our first micros with 16Kb of RAM, and then gradually added memory chips when we could af-

ford them, until we reached the dizzy heights (and the limit of standard 8-bit computer technology) with 64Kb. This was the early form of DRAM which was very slow by current standards with an access time of about 300 nanoseconds (ns). Note that if the term RAM is used for main memory, you can still safely assume that it is Dynamic RAM.

To make a memory unit that handles full-bytes of information (8-bits), you generally need eight RAM chips arranged so that the cells are aligned in a two-dimensional array. To access a byte, you simply

Over the years we have grouped together a large number of un-alike functions under a single term 'memory'.

address the matrix of chips by row number, and each chip will then transfer its appropriate bit of information along its column channel, which collectively make up the parallel data-bus.

Chips of this type are known as by-1 chips, since each delivers only one bit and you need eight in parallel to deliver a byte. But there are also by-2, by-4 and by-8 chips which can (respectively) receive, hold and deliver two-bits, a nibble or a byte simultaneously – although these aren't used nearly as much as by-1 memory chips.

So a 1 megabit (1024Kbit) memory chip can be fabricated as by-1 1024Kbit, or by-2 512Kbit, or by-4 256Kbit, or as a by-8 125Kbit module. Chips that can handle eight bits at a time (or nine bits with parity) are known as 'byte-wide' chips.

A PC XT with its old 8-bit processor required data to be delivered 8-bits at a time, so the memory banks were configured nine chips wide (eight by-1 chips, plus an extra for parity), while the AT required the chips to deliver 16+2 bits, and '386 computers need 32 bits at a time.

Most of the older computers used by-1, but they would often have nine to a bank: the extra one being used for parity checking. However nowadays you will often find that by-4 chips are used, and in these machines you'll find a number of by-4 chips in two parallel rows and often an extra by-

1 (or sometimes one extra by-4 for the whole bank), which is handling the parity.

The numbers printed on the top of a chip often tell you how they are structured; a chip imprinted with the number 1256-10 reveals that it is a by-1 256Kbit chip with an access time of 100 nanoseconds.

Nowadays we tend to measure RAM in megabytes, and it increasingly comes in SIMM (Single In-line Memory Module) form, although quite a few computers still use the RAM chip or DIP (Dual In-line Package) form. The larger SIP (Single In-line Pin) memory chips can also be mounted together on a plug-in card called a SIPP (SIP Package).

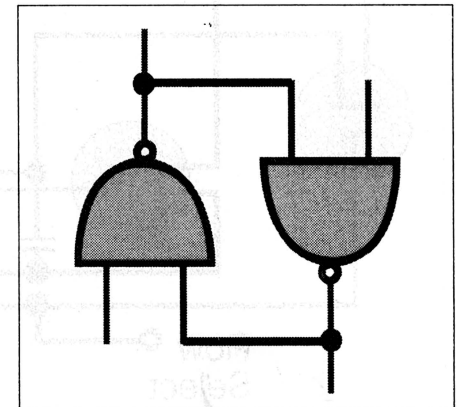
A typical SIMM or SIPP module integrates nine DRAM memory chips, eight of which are used for data and one for parity or error checking. SIMMs and SIPPs provide a convenient method of packaging memory chips to allow them to be simply plugged in and removed without the risk of damage that we often suffered with the older individual DIP 'cockroaches'. SIMMs are surface mounted devices and are far more compact, and they also appear to use less power and generate less heat.

Currently you can purchase 256KB, 1Mb, 2Mb, 4Mb, and 8Mb SIMM modules with 16Mb modules on the way. But note that there are both 'industry-standard' and 'non-industry standard' SIMM modules, so buy carefully.

Static RAM

RECENTLY THERE has been a rising interest in Static RAM (SRAM), and a couple of times I've come across articles which state that SRAM is a 'new' type of semi-conductor memory chip which is 'non-volatile'. Both of these claims are incorrect.

You didn't see the term SRAM used



The basic architecture of a flip-flop is two NAND gates connected head to tail.

much in the early days because it was assumed that all 'volatile' memory in the early mini computer would be of the Static RAM type. In the early days, a Static RAM cell was made by coupling two or more NAND (or NOR) logic gates in what is crudely called a 'dog-fashion' (nose to tail) configuration. Logic gates connected in this way are known as 'flip-flops' and, within a memory device, a single set of flip-flops capable of handling one bit of

onto a chip. Chip manufacturers are constantly trying to get more cells onto the available real estate.

The problem with SRAM flip-flops is not only that they require a number of transistors and a couple of small capacitors to a cell, but that these cells also consume a lot of power. SRAM doesn't need to be regularly refreshed (the memory does not need to be constantly updated by special circuits) as does Dynamic (D)RAM, however a reasonable amount of power still needs to be provided to SRAM chips if they are to hold their information.

And power is the second constraint on chip architecture. If you require high voltages (as did many of the early forms of memory) then you can't group your transistors and connecting tracks closely together on the chip surface, so close packing-densities become impossible. Moreover, if your active elements on the chip are high consumers of power, then this power must be dissipated as heat, and you'll need to keep the elements spaced out for temperature reasons also.

All these constraints effect the price of chip manufacture. In terms of bits-per-dollar, the more cells you can pack onto a single chip, the cheaper the memory becomes. But this isn't the only factor: the SRAM manufacturing process, for instance, has a lower yield than DRAM: the manufacturers need to throw away more defective SRAM chips from each batch produced, so

this increases their price accordingly.

So SRAM needs more space, consumes more power, has lower yields, and is more expensive than DRAM. So why would we want to use it?

The answer is 'access time' – SRAM's importance in modern computing is because its data is always very readily available when required by the CPU, whereas it takes an appreciable time for DRAM to record or reproduce its data. The faster access speed of Static RAM comes about because the change in state of a cell is performed by transistor-switching only, while DRAM requires the charge or discharge of a capacitor.

Off-the-shelf Static RAM chips, for instance, have access times in the order of 5 to 30 nanoseconds – compared to the 30 to 200ns times of DRAM (fast DRAM is in the 60ns range). IBM's special 129Kbit SRAM cuts the access time to 6.5ns, and both Hitachi and Toshiba have SRAM which rates at 9ns. This is why SRAM memory technology is used for CPU registers, internal and external CPU cache, video cards and so on.

Recently Static RAM has been making something of a comeback for main computer memory also, but generally it is still reserved for special purposes only. Since SRAM can maintain its information without needing to be constantly refreshed, it doesn't need special refresh circuits, and that helps a lot when you are building plug-in cards which would otherwise need their own refresh controllers.

So SRAM is finding a niche on memory cards which can be used for both application and data storage. This is a RAM-disk operation where the card acts as a solid-state substitute for floppy or hard disk drives. We will increasingly see these devices being used in laptops and portables where you can download your applications onto the card in your desktop machine, and then transfer the card to a diskless portable.

A 1Mb SRAM card has plenty of room for a small integrated word processing/spreadsheet/database application and space left over for data, but it will only retain memory while the chips have power, so a battery must be provided on the card. Generally the card will take power from the main computer power supply, but special circuits will instantly switch over to the on-board supply if power fails or if the card is removed.

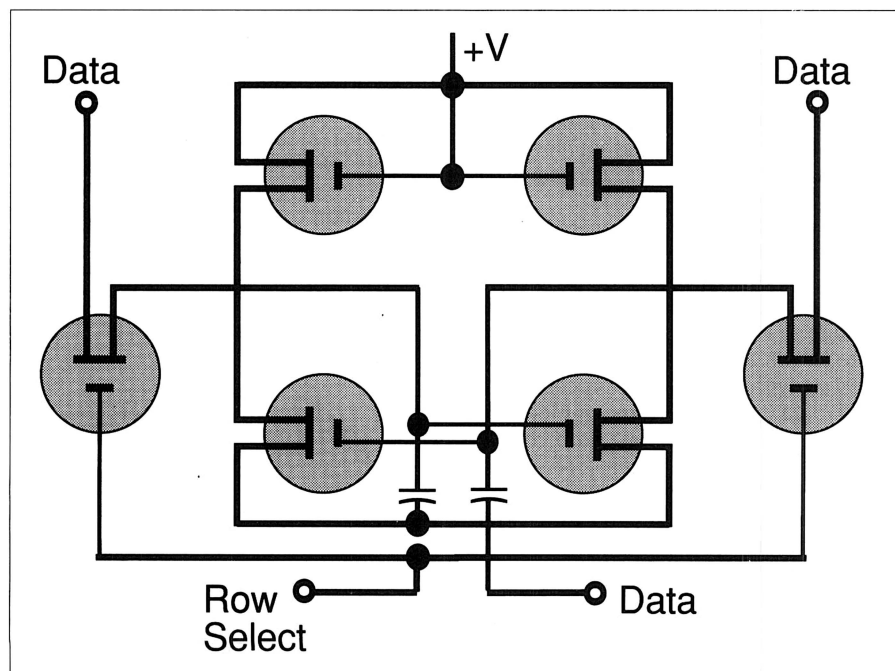
Dynamic RAM

DRAM STORES information as a unit of electrical charge across a MOS (Metal-Oxide Semiconductor) transistor. This is a

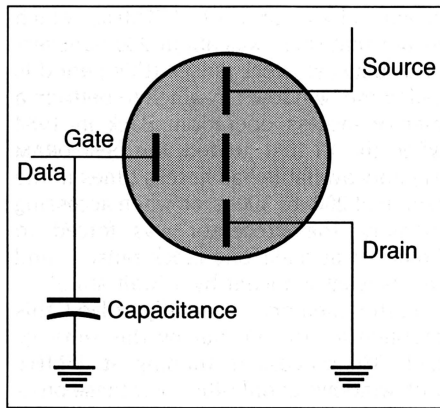
In terms of bits-per-dollar, the more cells you can pack onto a single chip, the cheaper the memory becomes.

information storage is known as a 'cell'.

There are now many different ways of creating these cells – some of which require four transistors, some five, and some six. The number of transistors and capacitors required for each cell is an important factor in the miniaturisation of memory: obviously the more required per cell, the fewer cells that can be crammed



Schematic of a flip-flop which is the electronic circuit which forms the basic storage unit of Static RAM.



The capacitance across a MOS transistor's gate-drain junction provides information stored in an EPROM.

form of capacitance storage which holds its charge in the same way that the condenser in electronic circuits stores minute amounts of 'static' electricity.

I've never quite accepted the fact that the technique that uses static charges was called Dynamic memory, and the one that uses dynamic transistor switching was called Static memory – but such is life! The makers claim that 'dynamic' refers to the constant need to refresh, so I guess that makes sense.

Since DRAM provides the main working memory in most computers, the designers need to use a technology which can change state relatively quickly. And since the access time will depend on how quickly these capacitance cells can charge and discharge, the power storage requirements of each memory cell must be kept very low.

Modern DRAM is designed to have cell capacitances so low that the charge will leak away in only a few milliseconds, which means the memory chips need to be constantly refreshed. In most computers this happens about every two milliseconds, and the system works very well – but the cost of using this approach is increased complexity from the provision of DRAM controllers, higher costs and extra power drain – all problems directly resulting from the need for this refresh circuitry.

There are other problems with DRAM. Whenever the data is read from a cell, the capacitance charge is destroyed. So DRAM controllers need to automatically re-write a bit to the cells they read. All this complexity means that SRAM is currently about six times as fast as DRAM. Also, DRAM is about one-hundred times as sensitive to radiation and interference than SRAM.

Offsetting these disadvantages are the power savings and speed increases which have resulted from DRAM micro-miniaturisation. The smaller and more compact the manufacturers can make memory cells, the less power they will consume and the faster they can react. Common DRAM chips at the present moment can provide 1Mbit of storage on each chip, and there are 4Mbit chips coming soon (which use 0.8 micron element spacing). Later this year we will see 16Mbit chips with 0.4 micron spacing and a 45ns access time, and later 64Mbit DRAMs; so the gurus say! Take this last claim with a grain of salt.

Nippon Telephone and Telegraph (NTT) claim to have on the drawing board plans for a 100Mbit DRAM-type chip, but this device depends on synchrotron orbital radiation (SOR) techniques which use electron wavelengths in the X-ray and visible parts of the spectrum. IBM is researching a similar process for its 64Mbit chips. The point is, that at these micro-dimensions you are reaching the limits of electronic (and therefore DRAM) technology and moving into the realm of light, so I wouldn't bet on seeing 64Mbit electronic DRAMs on the market in my lifetime.

One further advantage of DRAM, also a direct result of miniaturisation, is that modern DRAM-based computers can also have a 'standby' mode which disables all functions except the refresh. In this mode, the memory may only consume a few milliwatts of power to maintain its stored information. SRAMs can also have a 'standby' mode, but they consume many times more power.

The CMOS transistors used in modern DRAM and SRAM construction can maintain memory while drawing only minute amounts of current. A few years back, Mostek built two small lithium cells and a controller circuit directly onto a 16Kb CMOS Static RAM chip. A voltage sensor monitored the RAM's supply line, and if it dropped below 4.5 volts, the write circuits were automatically disabled to lock in the contents, and prevent erratic data changes.

When the supply voltage dropped below 3 volts, the switching circuits on the chip disconnected the external supply and brought one of the lithium cells into operation, and before that had fully discharged, the other battery would be switched in. It was an elaborate form of memory architecture, which, for a while, came to be known as NVRAM (non-volatile RAM), but it led to some new developments in main computer memory.

My ancient Tandy Model 100 portable

(probably the first real portable computer) uses a similar system to retain information in main memory for a couple of months, despite the fact that it is powered by only four pen-light batteries which, in turn, charge a small NiCad attached to memory. These early portable machines didn't have disk drives, but they came equipped with 32Kb of CMOS-type DRAM which auto-switched to this standby mode. For some reason, Tandy only claim that the memory will hold for about eight days, but I regularly get a month or two.

I have never understood why these same battery-backed main memories aren't used in mains-powered PCs. I can't think of anything I'd like more than to have battery-backed RAM in my PC. I could switch my Macintosh off tonight and fire it up instantly tomorrow, ready to work, exactly where I left off.

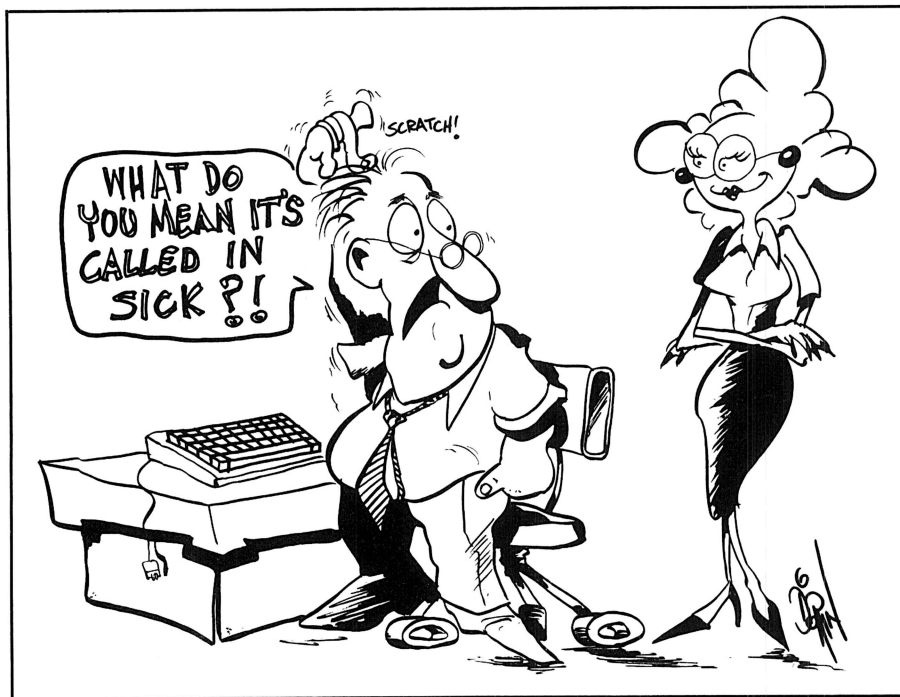
Whatever the type of integrated circuit – CPUs, memories, gate-arrays, ASICs and so on – there are common transistor designs which are used on the substrata (the 'die') of chips themselves. Typically, either bipolar or MOS fabrication techniques are used in memory construction.

The smaller and more compact the manufacturers can make memory cells, the less power they will consume and the faster they can react.

TTL (Transistor Transistor Logic) devices were the mainstay of chip design until the late 1970s when MOS took over; bipolar transistors (with an emitter, base and collector) were used in all early TTL devices.

The term TTL is now applied generically to a whole range of digital devices which conform to certain input and output specifications. TTL supply voltages and signal levels have become standard for virtually all internal operations of computers. Each signal line assumes either of two values represented by two different voltages on the line.

The current 5-volt TTL interface standard for computers will eventually be replaced by the 3.3-volt standard because of smaller component sizes – 5 volts is too



high when you get components on a chip closer than half a micron.

Bipolar TTL memory chips are potentially faster than current SRAM or DRAM chips, which generally now use MOS techniques. But the physical size of the bipolar elements and their high power requirement (and high heat generation), usually limit the number of cells on a chip to about one kilobit.

It was the development of the MOS family of transistors which allowed current memory-cell densities. There are a number of MOS techniques – NMOS, PMOS, HMOS, VMOS, DMOS and CMOS – but generally only the N/H and CMOS forms are used.

All MOS devices suffer from a common problem – they are extremely sensitive to static electricity – which is why you must unplug your computer from the power point (don't just switch it off) and earth yourself on the power-supply shielding before touching any chip inside.

The CMOS (Complementary Metal-Oxide Semiconductor) technique is popular for memory fabrication because it can closely imitate TTL devices, yet it dissipates far less power and can run on a wide range of supply voltages (from 3 to 15 volts). It is expected that eventually CMOS memory devices could be fabricated with one-quarter micron cell separation, which is eight-times as close (and therefore 64 times the packing density) of current chips.

NMOS (N-channel MOS) is also widely used, and modern NMOS devices only require a single 5-volt power supply, although earlier forms required a range of voltage levels. Modern NMOS techniques allow cells to be packed very closely on a chip, and they are fast and use very little power. And there's an even faster form of NMOS called HMOS (High-performance MOS) which is becoming increasingly used in high-speed low-power micros.

BI-MOS

A HYBRID OF the bipolar and MOS fabrication techniques has recently surfaced. This family of semi-conductor devices is collectively known as Bi-MOS, and the same hybridisation principals can be applied to SRAM or DRAM fabrication, using hybridised CMOS, NMOS or HMOS transistor techniques. This development appears to offer a major breakthrough in main memory speed – Bi-CMOS SRAM chips have been produced with a 6ns access time, the fastest yet.

And the timing of this development couldn't be better, because the increasing computing rates of high-clock-speed CPUs are beginning to outstrip the ability of the memory chips to read and write data. This is why we have this constant emphasis on 'wait states' – cycles of operation in the CPU where nothing is being done because the processor has to wait for the delivery of data from memory.

The early IBM XTs only had a processor

speed (clock rate) of 4.77MHz, which meant that there was about 200 nanoseconds between clock pulses (this period is called the 'window') in which to perform a memory-access operation. Back in 1984 when the XT first arrived, the best DRAM memory available had access times in the region of 200- to 300ns, so when accessing memory, the processor was forced to 'idle' for at least one clock pulse – and this is what is meant by a 'wait state'.

Faster memory eventually solved this problem for the XT, but by this time we had '386 processors running at 25MHz, with windows of only 40ns. For these processors, even the fastest commonly available DRAM is not fast enough (60- to 70ns) so wait states need to be added again.

The ways to overcome the wait state problem are by the provision of high-speed (SRAM) cache – internal (on the CPU) or external (as a partition of main memory) – and through 'pipelining'. The new Intel '486 CPU, for instance, has 8Kb of internal cache on the chip, while other techniques used with '386 computers provide, say, 32Kb of SRAM in a special section of the main memory.

Memory cache acts by holding a copy of

*When we can use
electronic devices to
replace mechanical
components, the
reliability skyrockets.*

the last data taken from memory, on the assumption that it may soon be required again, and by storing closely related information in fast memory. Any time a memory location is accessed, it and its neighbours are automatically moved to the cache and the new addresses are stored in the cache controller. The CPU will search the cache controller before accessing main memory in the conventional way – and about 80 per cent of the time it will find what it requires in this high-speed memory area.

Don't imagine that more memory cache is necessarily better. If cache is larger than 32Kb in most computers, too much time is wasted filling the cache on each access, and so the machine slows down even more. Memory cache also requires special

controllers which are now usually in hardware – and don't confuse this operation with disk cache, which performs much the same operations with data being imported from the disk drive.

Pipelining is a parallel technique which is now widely used in RISC chips and by Motorola's 68030 and Intel's 80386 CISC processing chips. During processing clock cycles, while the CPU is executing an instruction, the computer is also accessing the next memory location and bringing the data into cache. So instructions and data are pre-fetched to ensure that the CPU is never idle.

If you use your computer for word processing and the occasional spreadsheet, these techniques probably won't make much impact on your life, but they are important developments for those power users who are investing in i486-based graphic workstations, and for the larger network servers.

Shadow RAM

THERE'S ANOTHER source of confusion in IBM-compatibles, and that is with 'Shadow RAM'. When using DOS, many '286 and '386 computers use the area of memory above the 640Kb limit (but below 1Mb) to hold BIOS and video in RAM, rather than to leave these low-level functions in the slower ROM. Shadow RAM simply means that the contents of a ROM chip

these devices is Dual-Ported Dynamic RAM, a name that points to a circuit design which allows information to flow both to and from two different sources si-

I can't think of anything I'd like more than to have battery-backed RAM in my PC.

multaneously. The chips can output information to the video display through one port, while still allowing the CPU address-access through the other. VRAM can also write to a single screen-pixel location ('masked write'), while conventional SRAM and DRAM must handle the data a byte at a time.

In the new High Definition TV systems, the use of framestores and complex decompression techniques will require even faster memory techniques for video. HDTV will give us twice the number of screen lines, with each line holding twice the amount of pixel information, and it will refresh (update) the screen at twice the current frequency (from 50- to 100Hz),

of the memory chips. Access time can be very slow (in the 400 nanosecond region) for some of the older EPROMs and as fast as the 6ns times of BICMOS.

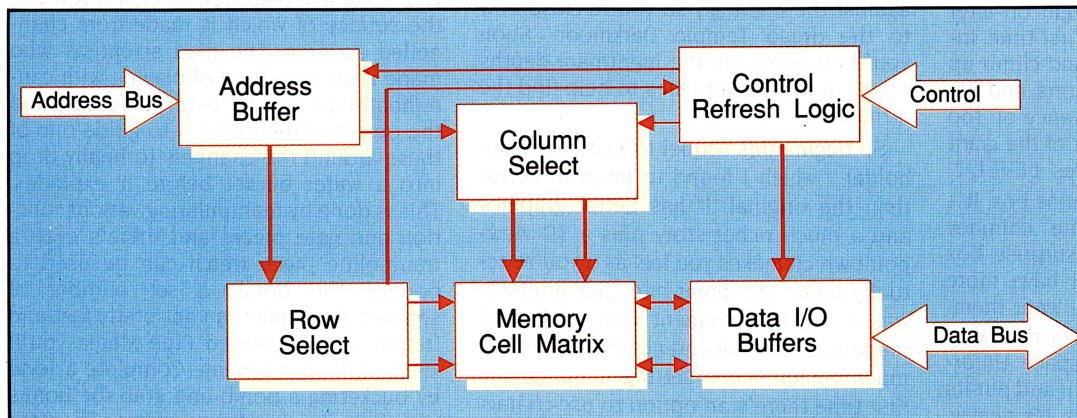
Settle time is similar, but it refers to the write phase. It is the time that must be allowed to pass after setting up the address, before the Write-pin on a chip can be pulsed (low) to write the data into memory. The Write-pin must be held at this low voltage for a finite amount of time to ensure that the data is written correctly into the cells – and that is called the 'Hold' time.

DRAMs have very intricate timing requirements (more critical than SRAM). The problem with DRAM chips is that they generally provide many more memory cells on each chip, and they therefore need either:

- many more pins to provide the location connections, or
- the address lines must be multiplexed to handle the larger address space.

Multiplexing is generally used to reduce the pin-count on a DRAM chip (to keep the physical size down), and so an address-strobe technique is employed to double the use of this smaller number of pins. With strobing, extra external circuits must be provided to handle the address-lines.

DRAMs also have the problem of needing a 'refresh' every two milliseconds or so. There are a couple of ways of doing this. Generally, memory locations are se-



The internal structure of a DRAM chip. This structure differs from SRAM mainly in the provision of the control and refresh logic circuitry.

have been copied over into the faster RAM area to speed up I/O and screen functions.

At this point, I should perhaps mention a form of RAM known as Video RAM (VRAM) – and note that the term Video RAM is used both generically (for a partition of main memory) and specifically to refer to a new type or memory chip.

VRAMs are special fast memory devices used to hold the video (screen-pixel) information in some of the newer graphics-oriented computers (most PCs still use DRAM for video RAM). The correct name for

so high-speed memory access will be essential.

So in a few years, the influence of faster access speeds on the electronic consumer products might be subtle and all pervasive. Eventually we will be integrating HDTV and computers, so this question of access speed is central to the development of future semi-conductor memory devices.

Access time is defined as the amount of time it takes, after a location is addressed, for valid data to appear at the output pins

lected on a row-by-row basis and the RAS pins on the chips are pulsed for each location. Other techniques enable the computer to refresh a small number of rows at a time. Refresh adds to the complexity of memory systems, but fortunately special refresh-control chips have been produced for the wide variety of DRAM chips available.

In Part 2, we'll discuss ROM, PROM and the family of EPROM devices, and also look at the new technologies of Flash memory and Ferro-electric RAM (FRAM). □



ERIC HOLROYD

Something for everyone

THIS MONTH'S COLUMN surely has 'something for everyone' with Arcade, Board, Adventures, Flight Sim, and Role Playing represented. Column space is always a problem so they're purposely kept short to include more reviews and screen shots. From this issue I'll be using one to up to five stars as a rating system to show what I thought of a game: POOR, FAIR, GOOD, VERY GOOD, or EXCELLENT.

Many of this month's games are supported by both Ad Lib and Roland cards and, as I had access to a Roland LAPC-1 card, I checked some out both ways. Shuttle's music track was GOOD with Ad Lib, but FANTASTIC through the Roland. The difference is that Ad Lib uses FM sounds whilst the LAPC-1's are digital samples. There's a big price difference in the cards though, so you get what you pay for.

Here's some tips for Baby Jo players: LEVEL 1: a) Don't carry straight on after you've seen the duck for the first time. Instead, eliminate the worms and climb up the tree. There are Bonuses, Arms, and Re-changes in the clouds. b) Advance on top of the black cloud to the right of the giant tree to find some nice surprises. LEVEL 2: a) Jump over the second surprise box. It's a nasty one! b) Above the chimney guarded by the dwarfs is a surprise box containing a pharmacy kit. I have more Baby Jo tips and codes if you want them.

Our January issue omitted a review of Battle Chess 2 due to lack of space. Unfortunately the Gremlin horned in and put its screen shot with Battle Chess 1's review. Sorry!

GAMERS: If you like the idea of games tips or have any you'd like to send in, then drop me a line. Other comments on the column are welcome too. Send them to: PO Box 371, Miller NSW 2168.

Eye of the Beholder II:

The Legend of Darkmoon ☆☆☆☆

TYPE: ADD/RP	GFX : VGA	SFX : AL/SB
RECD: HD/MS	CD : KB/MS	CP : NIL
SYS 640Kb	ALSO: AMIGA	RRP: \$69.95

Review copy from Electronic Arts (075) 911 388



THERE ARE RUMOURS of mysteriously disappearing villagers and human remains have been discovered in shallow graves. Available intelligence points to 'evil forces and the involvement of a powerful ancient artifact'. You're in a clearing in the haunted forest and see three enormous towers silhouetted against the night sky so you're close now to the dread Temple Darkmoon. Soon you'll be searching the nightmare depths of its catacombs for clues to help find the artifact.

So begins this sequel to Eye of the Beholder which I found to be even better than the original: It has better graphics and a much richer story plus a 3D viewpoint which makes you feel as if you're actually there. The point and click interface was a big improvement too, I felt, and made spell casting and general game play much easier. When setting it up for the first time there's an option to use characters from Beholder I and have most of their inventory retained. The package has a Reference Card and 60-page Rule Book and I found it easy to follow the setup and install instructions and start playing quickly. The new story-line offers a larger array of characters and lots of new monsters too who are smarter and meaner than ever. Some of the really nasty ones are human too! To sum up: the VGA GFX are stunning, the orchestral style music tracks terrific, and the animated sequences great. AD and D fans will love it!

Boston Bomb Club

☆☆☆+

TYPE: ARC/PUZ	GFX : VGA	SFX : AL
CD : KB/MS	CP : DOC	SYS : 512Kb
ALSO: MAC/AMIGA	RRP: \$69.95	

Review copy from Mindscape (02) 899 2277



SET IN A 19TH CENTURY gentleman's club in Boston, this addictive puzzler has you looking in plan view at a gaming table, the surface of which is made from channelled squares. The mad scientists who made it are very fond of playing with cannonball-type bombs (with lit fuses!) and the object of the game is to guide one of these around the channels to finally drop into a water bucket before it explodes. This is done by manipulating various junction and gate pieces and there's even a trampoline piece which can be used to bounce the bomb a set number of squares. Gameplay can get pretty fast and frantic – if you played Pipe Mania you'll know just what I mean. Complete a level by bucketing a bomb and grab the bonus tiles for extra points as you go. On some of the 30 levels the spectators around the table tend to interfere and move some of the channel pieces just to annoy you too. As an entertaining diversion between levels, Good Time girls in suspenders and basques hold up level number signs, and very artistic they are too!

This is one of those simple concept games that are easy to learn but not so easy to master and have you saying 'just one more time and then I'll go to bed'. GFX were good and SFX just OK. I liked it a lot.

Castles Campaign disk 1 The Northern Campaign ☆☆☆☆

TYPE: RP/WAR GFX: VGA SFX: AL/SB/ROL
RECD: HD SYS: 640Kb RRP: \$39.95
Review copy from Electronic Arts (075) 911 388

GAMERS WHO'VE COMPLETED the original Castles by building their own fortresses to secure peace throughout Albion, will welcome this 'add on' disk. It's the first in a series and offers a whole new adventure battling the rebellious Picts in the Northern wilds who are known to be much fiercer than the Celts ever were. It's made very interesting by the addition of extra trading features, and in addition to Grain, the player can now buy and sell Wool, Wine and Land, and is able to borrow and lend out Money. Troops are easier to control and can be recalled to be placed in new combat positions. The enemy now has archers and can attack in waves. Your own forces can be made more efficient through the use of a new Troop Training feature too, and for defence purposes, Cauldrons can be placed on diagonal walls.



All the original features are there for designing and building your own Castles, developing your army, governing the peasants, extracting taxes and so on, plus some additional GFX and messenger screens. I found it a worthwhile addition to my games library and recommend it to experienced 'Castlers'. The original software *is required* in order to play The Northern Campaign so if you haven't got it and fancy this one then check out the piggy bank for both.

Vengeance of Excalibur ☆☆☆☆

TYPE: RP/FAN GFX: VGA SFX: AL/SM/T
RECD: HD/MS CD: KB/MS/JS CP: DOC
SYS: 640Kb RRP: \$89.95
Review copy from Mindscape (02) 899 2277

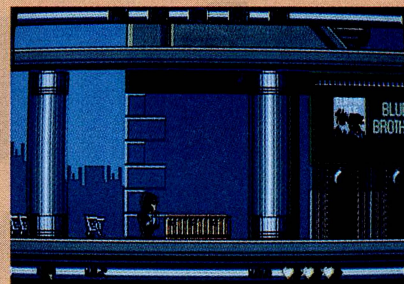
WHEN REVIEWING Spirit of Excalibur I'd commented on the easy user interface which in this follow-on is even easier to

Game of the Month The Blues Brothers ☆☆☆☆ +

TYPE: ARC/LP GFX: VGA SFX: AL
CD: JS CP: DOC SYS: 512Kb
ALSO AMIGA/C64 RRP: \$69.95
Review copy from Mindscape (02) 899 2277

JAKE AND ELWOOD are off on another mission, this time not from God, but to try and recover their band equipment which has been stolen and hidden all over town by a gang of thugs hired by the local sheriff. Seems he didn't like the aftermath of their last gig at the Palace Hotel Ballroom, so this time he's going to stop at nothing to prevent their next show – including putting them in hospital if necessary! They're going to have to crawl, run, jump and scramble through six levels to find their instruments whilst dodging the sheriff and his mad posse. Luckily they can ride on balloons or parachute down with an umbrella to escape.

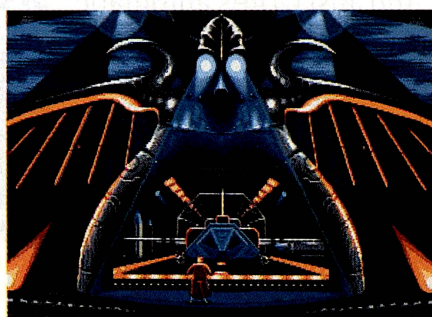
The Blues Brothers is for one or two players. I preferred one player mode as otherwise the action follows player One with player Two possibly being somewhere off screen. Each player starts with three lives and there are bonus items to pick up throughout with my favorite



being the very funny 'dance bonus' which features the boys bopping away for five seconds or so after picking it up. The cartoon style GFX of the various levels are well drawn and music from the original movie sound track plays throughout. The John Belushi and Dan Ackroyd look-alikes are uncanny as well as being nicely animated, and they react very well under joystick control, which is just as well as the game plays very fast. This is one of the most fun arcade games I've played in a very long time – it's certainly the Game of the Month.

handle. Everything now works nicely and directly from a mouse point and click, but if you prefer to play using joystick or keyboard then Vengeance can be configured that way too. The 256 colour GFX are crisper and more detailed too, but the game still has that good 'feel' about it that I liked before.

The Excalibur story so far is: The evil sorceress Morgan Le Fay had summoned a great Demon Lord known as the Shadowmaster who was freed from her control upon her death. He'd then kidnapped the court enchantress, Nineve, and stolen the mighty Excalibur along with the Holy Grail – Britain had begun to sicken and die as a result. As Commander of the Knights



of the Round Table you were pursuing the Shadowmaster to destroy him and set things to right again.

It continues now in mediaeval Spain, a divided land ruled by a powerful Moslem Caliph in the south and bickering Christian Kings in the north. There's much feuding between the rival kingdoms and greedy mercenaries are fighting under the flag of the highest bidder. Before departing Britain you'll choose four companions from seven listed knights (or eleven if you've imported four from Spirit). Once in Spain there are literally hundreds of cities and villages, palaces and dungeons, castles and fortresses, and much countryside to explore in search of the Shadowmaster. You must recruit as many followers as possible throughout the quest, as there are hordes of enemies to fight off and you'll need all the help you can get.

The richly detailed map lets you follow the action, and when you cut to close up (as they say in the movies) the GFX of the various scenes are extremely well done. SFX and music are well up to the standard we've now come to expect as the norm in PC gaming software and I'd say that Vengeance is a must for those who've played Spirit.

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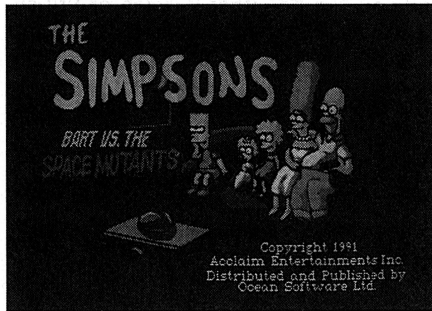


SYMANTEC.

The Simpsons – Bart vs The Space Mutants

☆☆☆+

TYPE: ARC/GA GFX: VGA SFX: AL/ROL
CD: KB/JS CP: DOC ALSO: AMIGA/ST
RRP: \$79.95
Review copy from Ozisoft (02) 313 6444



THIS COLOURFUL SPIN-OFF from the popular TV series has Bartholomew J Simpson battling a horde of Space Mutants who've landed in his home town of Springfield, USA. Seems they want to assemble a huge weapon which they'll be able to use to take over the planet. Bart runs around collecting and buying items like cans of spray paint, dart guns and slingshots to hinder their progress, and runs interference on them, too, by zipping around on his skateboard. As for the Mutants, Bart is the only one who can see them as he has X-Ray glasses to see inside Earthlings whose bodies they've taken over. Once detected he can kill them by bouncing on their heads. Radical, huh?

There are five levels: The Streets of Springfield, its Shopping Mall, Museum and Nuclear Power Station, and the Krustyland Amusement Park. Throughout these, the Mutants try to collect objects to help in their weapon building. Bart has to stop them or wreck those objects and can enlist the help of his family by building their names from collected letters.

The software auto detects video and sound cards; the cartoon GFX, music track, and SFX typical of this style of arcade game; game play is fun and fans of the TV show will love it.

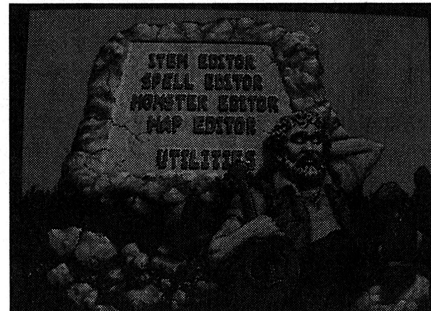
Bard's Tale Construction Set

☆☆☆☆

TYPE: RP/FAN GFX: VGA SFX: AL/SB/ROL
RECD: HD/12mhz+ CD: KB/MS SYS: 640Kb
RRP: \$69.95
Review copy from Electronic Arts (075) 911 388

THE BARD'S TALE SERIES of FAN/RP games must be one of the most popular series ever, with over 500,000 certified copies sold plus untold numbers of other copies 'circulated in mysterious ways'. It

was in the Top 20 listing of *Computer Gaming World* magazine for 24 consecutive months, too, so there's obviously a large worldwide following. With a history like that it seemed natural to bring out a Construction Set, and I'm sure that a whole new generation of Bard players will soon be designing their own fantasy worlds populated with imaginative new species, then swapping hints and tips via bulletin boards.



There's a great deal of design depth in the Construction Set offering a huge variety of items, spells, specials, monsters and the like, with numerous combat, damage, and armour options. The Map Editor lets you draw a dungeon level, city or whatever on a 22 x 22 grid complete with walls, trees, secret trails and so on. Then there are Utilities to: load/save items, spells and monsters; test a map; print a spell list; and build a game. In addition, it accepts monster pictures drawn with De Luxe Paint (Enhanced or Animator) and there are about 30 'slots' to save these pictures into. The manual tells how to Create a Bard's Tale World and has plenty of helpful suggestions on using the Construction Set's wealth of commands. The software has a ready made Sample Scenario, too, which is great to check over and see how it's all done. It's going to be a lot of fun building The World's Best Bard's Tale Adventure!

Breach 2

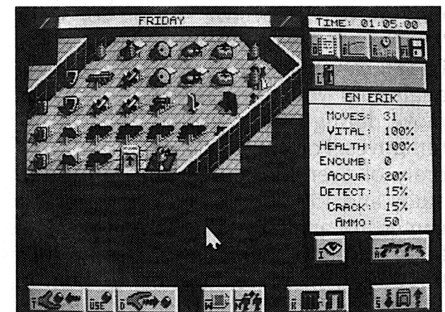
☆☆☆☆

TYPE: RP/SS/WAR GFX: VGA SFX: AL/SB/ROL
CD: KB/MS CP: DOC SYS: 512Kb
RRP: \$69.95
Review copy from Directsoft (02) 489 7853

THIS IS A GOOD mixture of action and strategy *a la* Carrier Command, Dungeon Master and the like, which has much close combat and brain exercise in planning tactics. Starting off involves creating your Squad Leader character and giving him whatever attributes you like, finishes by selecting a Scenario to play and its degree of difficulty. There's a wealth of choices, but if ever you run out of Scenarios, you

can build your own (or edit any of the existing 14) with the Scenario builder. Link together various Scenarios to form a campaign and thus set up a war game of however long you want.

The play screen has a slanting perspective from opposing corners (bottom to top) and looks as if it might be a kind of interstellar chess game. The various brightly coloured pieces represent marines and weaponry, terrain and opponents and so on – and the easy to learn rules make it a very interesting game and a lot of fun to play. The missions are very highly detailed and there are ten quite unique opponents, each having a high degree of artificial intelligence. You may control multiple characters on different missions, too. What makes it particularly interesting is that your enemies have access to the same list of weapons as you do, so it boils down to brain power in the end.

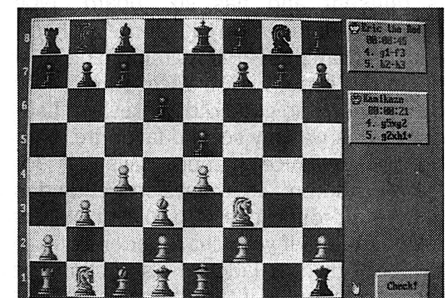


Breach 2 is a good follow on from the original, the player interface is very easy to work with – movement in eight compass points is allowed – and the whole thing is greatly enhanced with a good musical score and digitised SFX. Extra Scenario disks are available and the game interfaces with other Interlocking Game System modules from the same publisher.

Chessmaster 3000

☆☆☆☆

TYPE: BRD GFX: VGA SFX: AL/SB
CD: KB/MS/JS CP: DOC SYS: 640Kb
ALSO: CD-ROM RRP: \$89.95
Review copy from Mindscape (02) 899 2277



I'VE SEEN PLENTY of electronic chess games since I first became involved with computers, ranging from simple implementations to full on animated versions where the pieces actually battle it out for supremacy. I must say that I liked Chessmaster 3000, the latest one to come my way, as it had that good solid 'feel' about it and extended my chess skills to their limit. A Rate My Play feature does just that and confirmed that, as a chess player, I'm pretty average. Ah well, I enjoy a game anyway and the nice thing is that you can choose difficulty levels so that you're never really outclassed if playing against the PC. There's a great library of computer opponents to choose from too, like Pawn Grabber, Newcomer, or Champions from the Past, and you can create your own if there's nothing you fancy.

For beginners there's a very good animated tutorial which guides and monitors progress and on-line help during play for analysis play so far which advises on your next move. Perspective can be 2D, 3D or War Room views – GFX are great – and the board can be rotated for best viewing angle and you can return to a previous move during play to explore 'what if' alternatives. For serious players there's a library of over 150,000 Opening Moves to study and 150 of chess history's greatest games to analyse, too. Solve For Mate finds multiple solutions to a game plus there's an interface function to link up with popular chess database and info services. A printout feature lets you print full games and certificates of achievement.

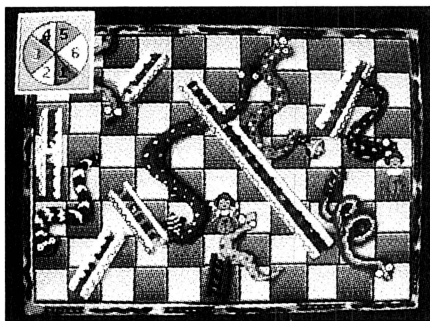
Hoyle's Book of Games –

Volume 3

☆☆☆☆+

TYPE: BRD GFX: VGA SFX: AL/SB/ROL
REQ: HD/640Kb CD: KB/MS/JS CP: DOC
RECD: MS RRP: \$69.95 ALSO: MAC/AMIGA
Review copy from OziSoft (02) 313 6444

I JUST LOVE PLAYING computer games such as Solitaire with all its variations and had so much enjoyed the first two Hoyle's Books of Games which were almost entirely that type of game. This new Hoyle's is different and has six 'board' type games: Dominoes (my favourite); Checkers (or Draughts); Backgammon; Pachisi (a kind of super-Ludo); Yacht (the classic dice game); and good old Snakes and Ladders – this was my second favourite, even though the nice manual says it's for 'small children', as it plays so well and is just so all-round cute. Up to four players take part, and if your character ends up at the bottom of a ladder he/she climbs it quite animatedly; if the character lands at



the top of a snake instead, it's 'slippery slide' time down to its tail. The game is very well implemented, as indeed are all the games in the package. Try having four competitive adults play Pachisi sometime if you really want to see sparks fly, too.

The user interface is simplicity itself and extremely well thought out with 'point and click' options throughout. A bar of five icons offers Control, Options, Stats, Rules and Help; the Select Game Screen has a menu of six buttons named for the games; and there's a 'Player Type Screen' for each game where players names are entered. I liked the easy way that all the games played, they looked and sounded good too, and they kept score. Younger folks will love Hoyle's 3, if they can get parents off the PC long enough to have a go.

Charge of the Light Brigade

☆☆☆☆

TYPE: RP/SS/WAR GFX: VGA SFX: AL
RECD: MS/286 up CD: KB/MS CP: DOC
SYS: 512Kb RRP: \$79.95
Review copy from Directsoft (02) 489 7853

THIS FAMOUS CHARGE occurred during the Battle of Balaclava in the Crimean War of 1854. A British force had landed at Crimea Bay (Russia) to check out fears by France and Britain that Russia was about to make a takeover bid for the crumbling Turkish Ottoman Empire. They'd already invaded Romania and had refused to withdraw, despite Turkey's ultimatum. The Turkish Sultan declared war on Russia, then Britain entered when the Czar's forces first massacred 4000 Turkish sailors and fired on ships of the aforesaid British force which housed diplomatic truce talks and were showing white truce flags. The first stage of the battle had British soldiers in their bright red uniforms spread dangerously thin. This went down in the history books as The Thin Red Line. Then came the Charge of the Heavy Brigade, followed naturally enough by the Charge of the Light Brigade. The last stage was the Battle for the Redoubts.

All this and much more detail is contained in the background booklets which come with this very good computer simulation for one or two players. Using the 'miniature-style' system as per Cohorts and Rorke's Drift, it lets you replay all four major sectors of the Battle of Balaclava and you can be either Russian or British. Once again, the animated GFX and mouse/icon user interface are of a very high standard, and the simply huge game area with its wide variety of troop types maintains a high interest level. Strategic and tactical maps supply all the information you need, but you still have to make all the life and death decisions yourself.

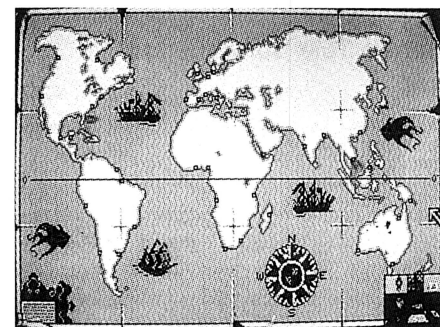
Merchant Colony

☆☆☆☆

TYPE: RP/SS/WAR GFX: VGA SFX: AL
RECD: MS/286 up CD: KB/MS CP: DOC
SYS: 512Kb RRP: \$89.95
Review copy from Directsoft (02) 489 7853

HERE'S A FASCINATING game of eighteenth and nineteenth century politics, exploration, trading and fighting for all you Empire Builders out there. I found it a very stimulating simulation of what must have happened to our earlier generations and it certainly gave me a lot of food for thought about the period. The point and click user interface makes sailing, trading, conquering and so on, all easy to do, but the huge strategy decisions are up to the player alone. The excellent manuals cover just about everything and the very pleasing GFX are of a very high standard indeed.

Merchant Colony is set against a background of the Industrial Revolution (1780 – 1840) with its reduced costs of manufactured goods. Great advances in railways and shipping were made which resulted in a huge growth in international trade. France was the strongest state in 18th century Europe, but declined after Napoleon's 1815 Waterloo defeat. The Ottoman Empire, Spain and Netherlands were second rank powers; front rankers were Prussia, Britain and Russia. Many European states steadily developed interests in far-off places like India and Africa,



with Britain being the most successful on account of its Navy.

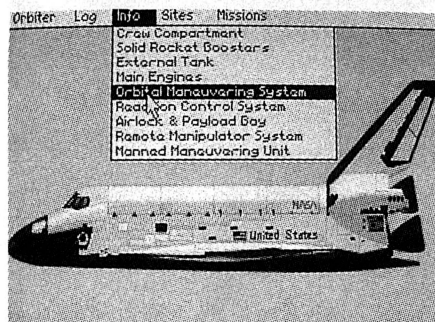
Various coalitions between many of the great Powers resulted in fierce rivalry and numerous wars. The main barrier to continuation of a war was money and the high cost of warring brought about a system of international banking. Money won wars; international trade earned money; the best traders had the most money, could fight the longest wars, acquire more territory and trading opportunities, so round and round it all went. (It's still going, come to think of it.)

Shuttle – The Space Flight Simulator

☆☆☆☆+

TYPE: SIM GFX: VGA SFX: AL/ROL
RECD: HD/MS CD: KB/MS/JS CP: NIL
SYS: 640Kb AL/50: AMIGA RRP: \$89.95
DOS 5.0 also recommended
Review copy from Mindscape (02) 899 2277

GREGG FAULKNER, WHEN reviewing Flight Simulators (YC, Oct '91), posed the question 'I wonder who'll be the first with a realistic Space Shuttle simulator?' Well, it was Virgin Games – here it is, and very good it is too! Like any worthwhile software it needs a fair investment in learning time, but this is helped along by the very good 144-page *Instruction Manual* plus the separate 26-page *Mission Guide*. Some of the GFX – the cabin console layout, for instance – are nothing short of fantastic,



whilst the very large external shots of the Shuttle itself are just a little 'blocky'. The very nice 4- by 3-foot colour poster of the cabin console included with the package would help greatly if pasted up near the computer.

The accompanying literature says that Shuttle is based on actual NASA tests and documentation. Personally, I thought some of it quite reminiscent of Reagan's Star Wars, his Strategic Defence Initiative. There are set procedures for launching, landing and orbiting just like those we've seen on live TV during an actual Space Shuttle flight, whilst onboard computers monitor everything and provide a great

PC TITLE	TYPE	DISTRIBUTOR	RRP	OTHER
Abandoned Places	RP	Questor	\$TBA	
BAT 2	RP	Questor	\$TBA	Amiga, ST
Birds Of Prey	SIM	Electronic Arts	\$TBA	Amiga
Buck Rogers II	FAN	Electronic Arts	\$TBA	Amiga
Captive	RP	Mindscape	\$79.95	Amiga
Centerbase	ARC	Mindscape	\$79.95	Amiga
Conspiracy	GA	OziSoft	\$TBA	
Darklands	RP/TA	Questor	\$TBA	
F16 Combat Pilot	SIM	Electronic Arts	\$29.95	Amiga, C64
Fate - Gates Of Dawn	RP	Mindscape	\$79.95	Amiga
Gods	ARC	Mindscape	\$79.95	Amiga
Golden Eagle	GA/RP	Mindscape	\$79.95	Amiga
Gorby - Kremlin Crisis	SIM	OziSoft	\$89.95	
Indiana Jones - Atlantis	GA	OziSoft	\$79.95	
La Russa Fantasy Exp.disk	SPT	Electronic Arts	\$29.95	
La Russa Classic Stadiums	SPT	Electronic Arts	\$29.95	
Lord Of The Rings v2	RP	Electronic Arts	\$79.95	
Magic Candle 2	RP	Electronic Arts	\$69.95	
Manchester United Europe	SPT	Electronic Arts	\$59.95	Amiga, C64
Mega fortress Mission Disk	SIM	Electronic Arts	\$TBA	
Omar Sharif's Bridge	SIM	Electronic Arts	\$TBA	
Planet's Edge	RP	Electronic Arts	\$79.95	Amiga
Powermonger	FAN	Electronic Arts	\$TBA	Amiga
SimAnt	ED	Electronic Arts	\$TBA	Mac
Star Trek	GA	Electronic Arts	\$79.95	
Strike Commander	SIM	Mindscape	\$109.95	
Supaplex	ARC	Electronic Arts	\$59.95	Amiga
Taking of Beverley Hills	GA	Electronic Arts	\$69.95	
Tin Tin On The Moon	ARC	Electronic Arts	\$29.95	Amiga
Transatlantic	SIM	Mindscape	\$69.95	Amiga
Trump Castle:Lots-O-Slots	SIM	Electronic Arts	\$TBA	
Trump Castle:Poker	SIM	Electronic Arts	\$TBA	
Ultima - The Underworlds	RP/GA	Mindscape	\$109.95	
Ultima VII - Black Gate	RP/GA	Mindscape	\$109.95	

Details supplied by listed distributors. PC prices shown, others may vary.

March releases: Prices shown are for the PC version and may vary for other formats. New release details from other distributors were unavailable at press time. For further information contact Electronic Arts (075) 91 1388, Directsoft (02) 489 7853, Mindscape (02) 899 2277, Nalco (02) 630 2936, OziSoft (02) 313 6444, Questor (02) 662 7944.

Legend of Abbreviations used -

ADD - Advanced Dungeons & Dragons Role Playing	AL - Ad Lib Card
AO - Adults Only	ARC - Arcade action
CD - Control Device	BRD - Board Game
DRV - Driving game	CP - Copy Protection
FD - Floppy Drive	ED - Educational
GU - Gobble Up	GA - Graphic Adventure
KB - Keyboard	HD - Hard Drive
LP - Ladders/Platform	JS - Joystick
PUZ - Puzzle Game	RS - Real Sound
SB - Sound Blaster	SPT - Sports
SFX - Sound Effects	SM - Sound Master
SYS - System	SIM - Simulation
SS - Strategic Studies	RP - Role Playing
	SU - Shoot Up
	WAR - Military Strategy

The reviews list the software's maximum graphics capabilities.

GA/EGA/MCGA/Tandy and other users should call the listed supplier for details.

deal of information to help you fly the various missions. Keyboard commands and function keys are covered in four pages of the manual and there are drop down menus too. Like all good simulators

it has fail-safe procedures, and if the autopilot fails on Launch or Landing, then you must take over manually to do the job. As I said, most realistic, and I recommend it to computer pilots everywhere. □

DIGGING WITH A NOTEBOOK

A LapPaq notebook proved itself during a recent archaeological 'dig'.

FOLLOWING THE original find by a French archaeological team some 60 years ago, a location in northern Syria was identified as the historic royal city of Ti Barsip, a place of human settlement for over 5000 years.

The area also formed an important crossway between Mesopotamia and the ancient Mediterranean world which is attested by the palace and grand buildings dating to the ninth century BC.

An important reason for its settlement was its location adjoining the Euphrates River and its fertile valley. Now occupied by local Arabs as the village of Tell Ahmar, the second major hydroelectric development on the Euphrates River will result in this important historical site eventually being submerged under dam waters.

In 1988, a team of archaeologists from the University of Melbourne commenced what is effectively a salvage and recording operation before access to the site is lost.

The 1991 'dig' team, led by Dr Bunnens, required a suitable computer to record data on the historical artifacts recovered from beneath the thousands of years of dust. More than 300 important objects were recovered during nine weeks of digging undertaken on the eight-hour daily shift. The elevation and coordination points of walls and other structures of Til Barsip were also collected and recorded, ready for transfer to a graphics package on return to Melbourne.

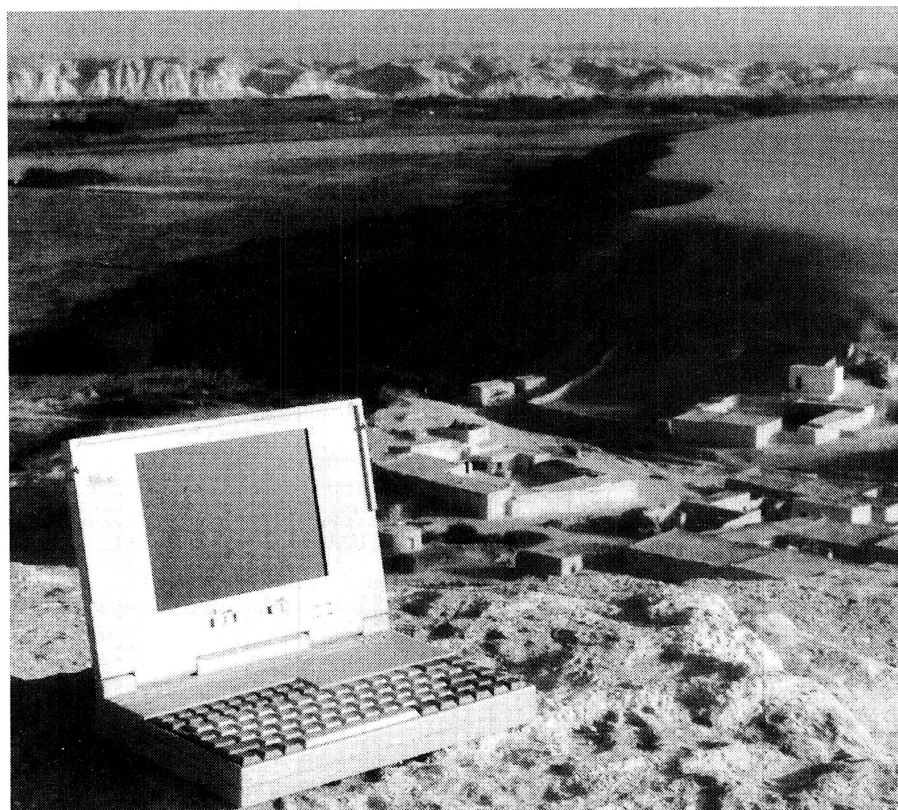
A member of the University's team, Dora Constantinidis, coordinated the use of a LapPaq notebook. The benefits of storing archaeological data on electronic retrieval systems have been recognised for some time. Usually, however, the remoteness of the location or other site problems

hamper the efforts to record data as finds are unearthed.

'The LapPaq gave us a trial run and, as expected, the speed and efficiency of recording findings as they came to light was facilitated by the notebook. Despite

own battery power diminished,' Dora added.

If funding continues, a few more expeditions to the site, before it disappears beneath the waters of the second Euphrates dam, will reveal more information from



The LapPaq notebook with the village of Tell Ahmar in northern Syria in the background.

the dusty environment and an average daily temperature of 40 degrees, the 3.3kg LapPaq with its 20Mb hard disk drive offered the necessary capacity. More appropriate was its ability to cope with the unstable local electricity supply, which was unavailable during daily three to four hour blackouts. With battery power, it could be used during these periods, and allowed data to be saved before the notebook's

the thousands of years of human habitation at the site. The LapPaq notebook assisted enormously in recording all the information recovered in this fourth annual dig at Tell Ahmar.

The LapPaq notebook was provided by LapPaq Computer. More information on its notebook range is available from the company in Sydney on (02) 680 1377 or toll-free (008) 221 112. □

LTE GOES LITE

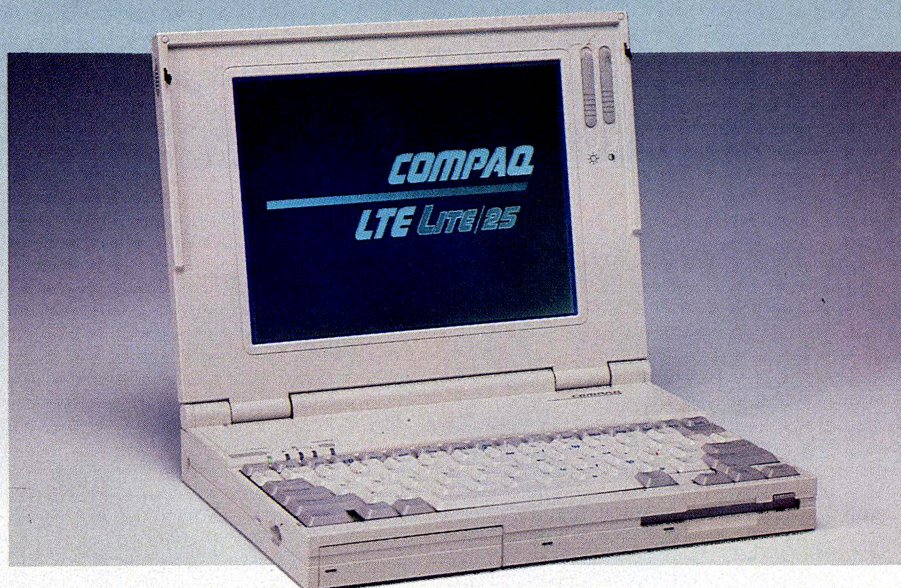
Compaq takes on the notebook market with new models and aggressive pricing. Mark Cheeseman looks at the two newcomers to the market.

COMPAQ HAS re-vamped its LTE notebook range, with a new low-calorie model available in two flavours – the LTE Lite/20, and the LTE Lite/25. Weighing in at 30 per cent less than its predecessor, the new model is the result of a concerted diet program concentrating on several key design areas.

As a result, Compaq has also shaved about a centimetre off the thickness of the machine, although not surprisingly, the other key dimensions are unchanged, restricted as they are by the constraints of a reasonably-sized keyboard and screen. Speaking of the keyboard, Compaq has finally relented to market pressure and fitted a standard inverted-T cursor control keypad, a move which is bound to eliminate a lot of cursing from users more used to the standard layout.

More than any other single change, the move from the '386SX processor to the SL variant has resulted in significant reductions in design complexity and power consumption. The SL is specifically engineered for laptops, and incorporates many of the power-saving facilities that laptop designers previously had to add using extra support chips.

The Lite models also mark Compaq's first use of alternative battery technology – a Nickel Metal-Hydrate battery is standard equipment on the 25MHz model, and an option on the 20MHz variant. This, and a new, lower-power, screen, result in a claimed battery life of 3 to 4.5 hours. The battery recharges fully in an hour or so,



while the unit is running.

A pop-up battery gauge displays remaining battery life in hours and minutes (with an accuracy of 10 minutes), calculated on current usage patterns.

In addition to the usual low-power 'sleep' mode, the new notebooks incorporate a unique 'hibernation' mode, which saves the current program status to disk, allowing the machine to be turned off indefinitely, yet have all applications restored to the state they were in prior to going into hibernation.

Hard disk capacity ranges from 40Mb on the entry-level 20MHz machine, up to a maximum of 120Mb in the Lite 25. An 84Mb drive is available in either model. Memory starts at 2Mb in the 20MHz model, and double that in the 25. The latter also sports a 16Kb RAM cache, to maximise performance.

One option which Compaq is continuing with is the desktop docking station – 70 per cent of the old LTE/20 machines were sold with the docking station. It was the versatility of this configuration that won Compaq the *Your Computer* PC of the Year last year.

The new docking station is slightly

smaller than its predecessor, to cater for the smaller size of the notebook. However, a spacer is provided, allowing the older (heavy) LTEs and the new models to share the same docking adapter. Incorporated in the docking adapter are slots for two standard ISA expansion cards (great for a network card, or a CD-ROM adapter), as well as two hard disk drive bays, allowing up to 240Mb of additional disk storage in the desktop unit.

An optional VGA monitor and external keyboard transform the LTE and docking station into a fully-fledged desktop computer. In addition, the notebook can be physically locked into the docking station, preventing its removal by undesirable characters, who would have little difficulty in concealing the notebook as they left the building.

The new models are shipping now, and pricing starts at \$5284 for the 40Mb Lite/20, up to \$8044 for the 25MHz model with the maximum 120Mb of hard disk storage. The desktop expansion base is \$1450, plus the cost of a keyboard and VGA monitor, if you require them. For more information, contact Compaq, (02) 660 0077, fax (02) 660 3120. □

WIN

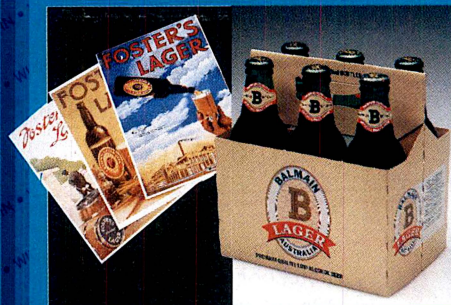
Play for these

This month, WINLINES is giving away over 50 deluxe prizes, including top sport and leisure goods, a fully installed Proton car stereo system, and a holiday for two. To play, just select the prizes you would like to win, then phone the Winline numbers next to those prizes. You may call as many times as you like. When you call, you will be asked to stand by as we spin the wheel. If the prize you selected comes up on the wheel, you're in the draw.



WIRRINA RESORT HOLIDAY – Our winner will receive a week's holiday for two at the fabulous Worrina country resort, situated one hour out of Adelaide. This prize includes accommodation, breakfast and use of Worrina's facilities, including golf course, tennis courts, horse riding, fishing, spa, sauna, solarium and gym.

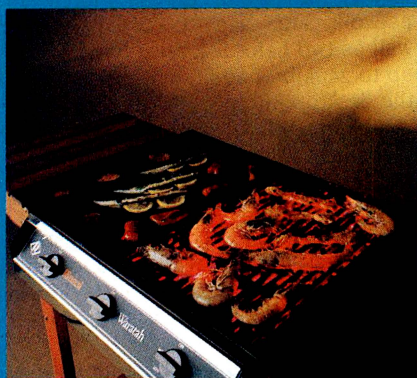
WIN
00555 1040
LINE



TAKE THE PUB HOME – Ten cases of premium quality Balmain Lager will go to the winner. Five runners up will receive 3 classic pub art beer posters as well as copies of Australasian Beer Guide and Australian Home Brewing magazine.

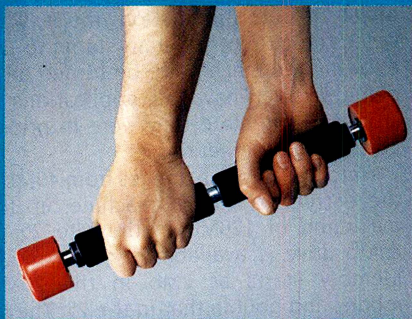
WIN
00555 1041
LINE

NB: Residents of NSW and NT and under-18's are prohibited by law from winning the first prize.



\$700 BARBEQUE – To the winner, a Rinnai barbeque with its own Jarrah wood stand, and complete with gas cylinder and kebab set.

WIN
00555 1045
LINE



EXER-STIK TRAINING AIDS – Ten winners will receive the remarkable Exer-Stik – the portable training equipment imported from the USA, designed to build strength and enhance flexibility in the fingers, hands, wrists and forearms. Recommended by golf and tennis professionals, the Exer-Stik can aid any sportsman in attaining that all-important edge.

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00555 1046
LINE



CLASSIC ROCK VIDEOS – For the first prize winner, a set of 10 full length rock videos, including The Doors, Eric Clapton, Aerosmith, Cheap Trick, Alice Cooper, Eurythmics, Tesla and more. Plus the winner and 12 runners up will receive the classic Australian Made live video, featuring INXS, Jimmy Barnes, Divinyls and other top Australian acts.

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WINLINES

quality prizes

Then you'll be asked to leave your name, address and phone number. If you win, your prize will be forwarded to you directly, and your name will be published in a future issue of this magazine.

You can call the Winlines any time, day or night. They will remain open until five minutes before the prize is drawn, so if you don't get lucky the first time, you can have another go.

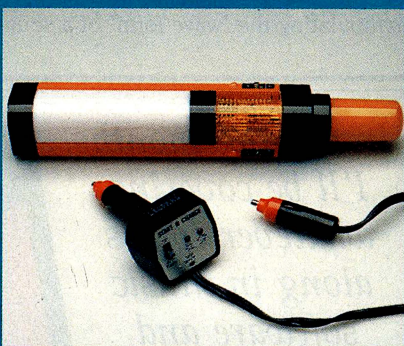
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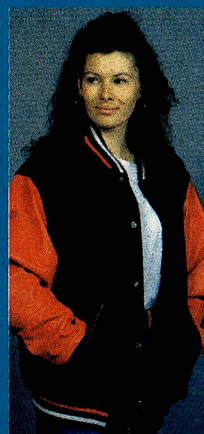
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TAKE NOTE



ERIC
HOLROYD

The Ad Lib MIDI Kit

WELCOME TO THE first of a regular series of music-associated articles. In coming months I'll be covering whatever comes along in music software and hardware. Remember though, that I'm not a high-tech MIDI wizard, but a regular computer hobbyist and working musician. However, if you have specific MIDI questions or queries on music packages reviewed, then write in and I'll try to get answers for you. We'll print what we can and I'll mail answers back to readers enclosing a stamped, self-addressed envelope.

In our December '91 issue, my MIDI music article required editing somewhat due to last minute space shuffling, and a number of astute readers realised that there was a bit more to it than actually appeared. Anyone interested in getting the complete file in ASCII format, plus the mini MIDI glossary which the Gremlins had also attacked (they'd 'corrected' my quite proper spelling of 'quantize' to have an 's' instead of 'z', too!), can do so by sending me any size disk in a mailer together with return postage.

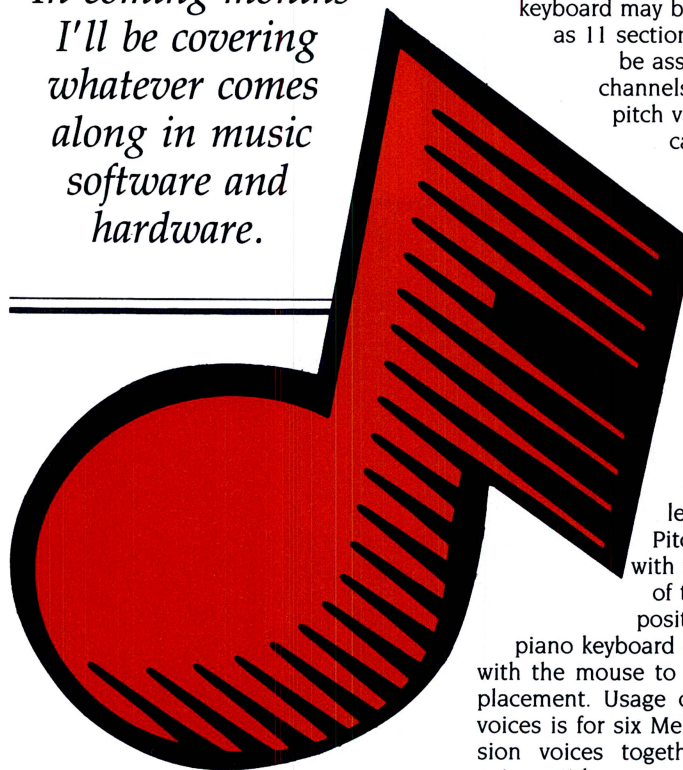
Please address correspondence to: PO Box 371, Miller NSW 2168.

The Ad Lib MIDI Kit

A MUSIC MAKING system for IBM PC and compatibles. The PC has become a hugely popular games machine in recent times, thanks to greatly improved graphics and the realistic sound effects and music made possible by the Ad Lib card. For the uninitiated, this card slots inside the PC to be then connected by a cable to an external speaker or amplifier. I have my PC hooked up to a cassette stereo's Line In sockets for playing through its amplifier, and I can directly tape music tracks from it too. The Ad Lib card has become something of an industry standard as there are now a number of other sound cards available which offer 'Ad Lib compatibility'. Most software publishers now include specific support for this card for use when configuring a new program for your particular computer setup. Once that's done, the music and sound effects play automatically whenever you run the program.

The PC and its compatibles use two main sound formats, either FM (Frequency Modulation) or digitally recorded samples of *actual instruments*. The latter is more expensive to produce due to all the recording and circuitry involved and gives very high quality sound. Ad Lib's FM system uses less expensive synthesiser circuitry to produce *simulated instruments* by manipulating the 'wave form' of a sound.

*In coming months
I'll be covering
whatever comes
along in music
software and
hardware.*



Horses for courses, but for general home and hobby purposes, an Ad Lib-equipped PC is a pleasing music making machine. I recently checked out a complete range of Ad Lib add-ons for users to get the best out of it.

The complete Ad Lib MIDI Kit (RRP \$329.95) comprises: a MIDI interface card, compatible with Roland's MPU-401 industry standard; the Visual Composer se-

quencing software; and the MIDI Supplement which allows you to connect a polyphonic MIDI instrument for music entry. Add this to your system and you can record or play up to eleven tracks of music using any of the 145 preset instrument sounds. There's everything from Piano and Flute, Guitar, Horns and Brass, Bass Drum, Snare Drum, Tom Tom, Cymbal and HiHat, with many variations on each. If you're using a keyboard synthesiser for recording your music, you can assign Visual Composer's tracks to use the synth's Preset voices if you prefer, also its

keyboard may be 'split' into as many as 11 sections, each of which may be assigned to specific MIDI channels and voices. Multiple pitch values *within each split* can be transposed too.

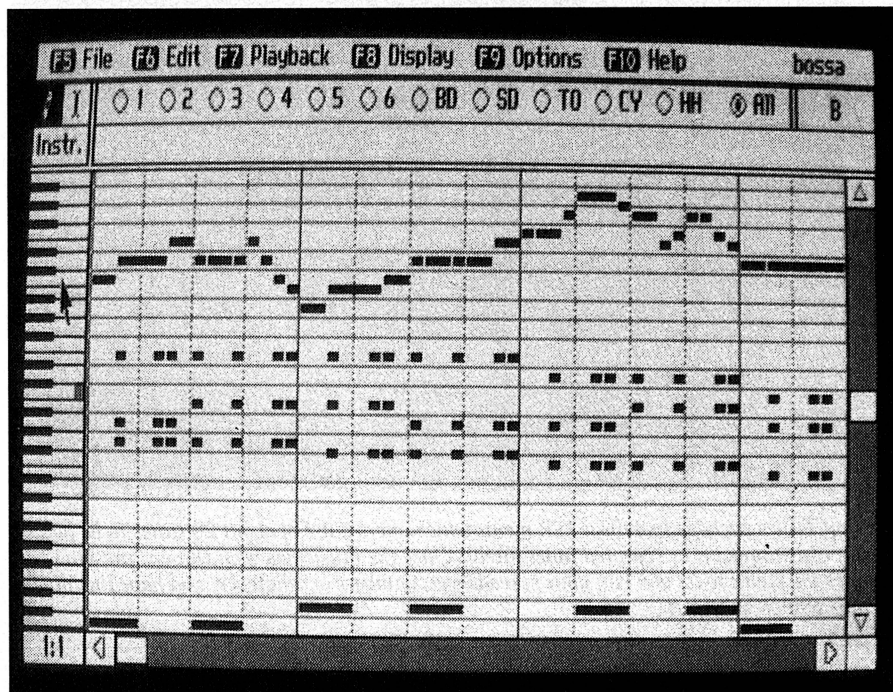
Visual Composer is very easy to learn and use, has good Online Help, and uses the familiar piano-roll screen where notes are shown as horizontal dashes lined up with the vertical piano keyboard at screen left. Note Duration corresponds to dash length with both it and Pitch being easily edited with the mouse. The name of the note at the cursor position is shown and the piano keyboard notes can be 'played' with the mouse to ensure accurate note placement. Usage of the eleven Ad Lib voices is for six Melodic and five Percussion voices together *or* nine Melodic voices with no percussion. Quantizing of both input and output is available, up to 96 divisions per beat with user specified beats per measure, ticks per beat, and overall tempo, similarly controlling changes of instrument, tempo, volume and pitch bend. There are looping options to repeat music patterns, and full edit facilities (Cut, Paste, Copy, and so on) are on the drop down menus with keyboard equivalents to most mouse functions.

The MIDI supplement is a separate disk program which patches in (installs) to the actual Visual Composer software a MIDI access facility for your MIDI instrument. All the disks in the Ad Lib system are non-copy protected and you're urged to make installations such as this one on a copy of

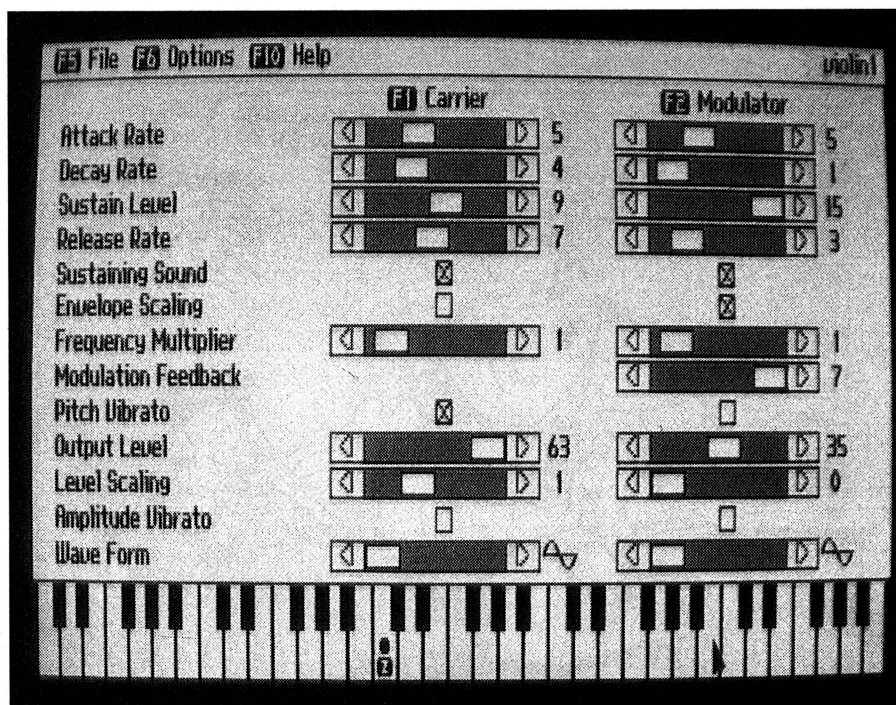
Once that's done, the music and sound effects play automatically whenever you run the program.

the original disk. Always a good idea! The Visual Composer package includes a Composition Projects manual which is a guide to creating music in popular styles. Using this together with the song files on disk it's very easy to put a song together. Styles included cover everything from Classical to Boogie and Blues to Bossa Nova. The actual Visual Composer software package (RRP \$129.95) is available by itself, that is, without the MIDI interface and MIDI Supplement (RRP \$69.95). If you don't have a MIDI instrument, then just use the Visual Composer software. If you *do* have a MIDI instrument, and already have an interface installed, then get VC plus the MIDI supplement.

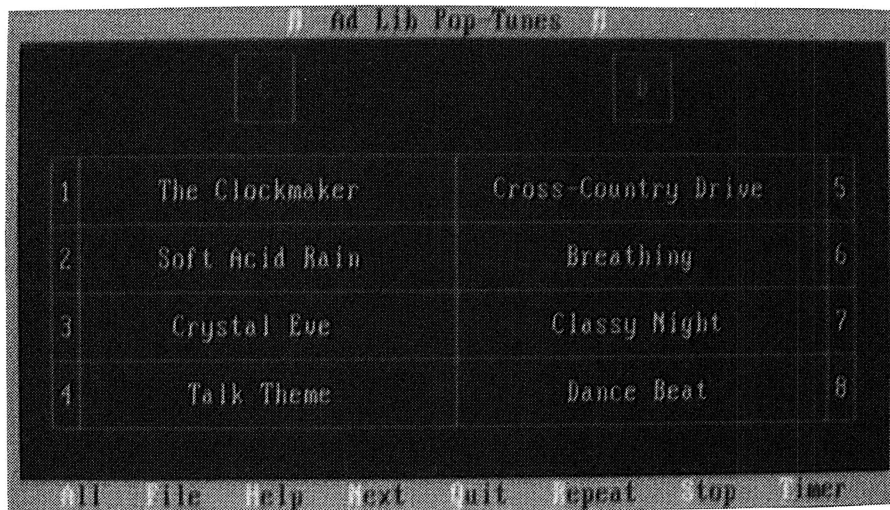
Another very useful extra is the Ad Lib Instrument Maker (RRP \$79.95), which allows you to quite easily create and store new instrument patches. Like all the Ad Lib software reviewed, the screen display is pretty well self-explanatory and easy to get around. The piano keyboard is at screen bottom this time and above it is a range of mouse controlled 'sliders' which let you adjust and set the 'sound envelope' parameters listed alongside. In addition to its ADSR (Attack, Delay, Sustain, Release), you control the likes of Pitch Vibrato, Output Level, Amplitude and Vibrato there. Don't worry if you don't understand, just play with the sliders then play a note on the piano keyboard to hear your adjusted sound being played. Your new sounds can be assigned to Visual



Visual Composer is very easy to learn. As you can see, it uses the familiar piano-roll screen where notes are shown as horizontal dashes lined up with the vertical piano keyboard at screen left. Note Duration corresponds to dash length with both it and Pitch being easily edited with the mouse.



The Ad Lib Instrument Maker allows you to quite easily create and store new instrument patches.



The Pop Tunes package installs a TSR menu which offers a list of about 20 tunes to be played singly, continuously, or repeated indefinitely. Once the music has been chosen, pressing 'Q' removes the menu to let you run your spreadsheet, database or whatever, and have this music playing whilst you work.

Composer tracks just like the existing instruments.

For coders wishing to include music and sound in their programs, there's an *Ad Lib Programmer's Manual* (RRP \$69.95) which covers every aspect of writing, both

for the card and its Sound Driver. Sound Synthesis is explained in great detail as are the parameters I mentioned when discussing the Instrument Maker. All the reference material required by programmers (File Structures, Note Frequencies,

Operators, Register Reference, Functions and so on) are there and the accompanying disk has programming examples written both in C and Basic. Explanatory readme files are included.

The Pop Tunes package (RRP \$69.95) installs a TSR (Terminate and Stay Resident) menu accessed by Alt-Left Shift which offers a list of about 20 tunes to be played singly, continuously, or repeated indefinitely. Once the music has been chosen, pressing 'Q' removes the menu to let you

The Visual Composer package includes a Composition Projects manual which is a guide to creating music in popular styles.

run your spreadsheet, database or whatever and have this music playing whilst you work.

The menu has some good pop and rock tunes plus Chopin classics, Beethoven's Moonlight Sonata and others. Jukebox tunes from the original Ad Lib card package or your very own Visual Composer creations can be used here too. A timer option lets you set the time and day for the software to play a particular tune, which could be useful as an alarm or reminder.

Finally there's the educational musical quiz package Music Championship I (RRP \$79.95), in which music students compete against the computer or friends. Perceptions of the seven basic musical characteristics of Pitch, Tempo, Key, Register, Rhythm, Volume and Mode (Major or Minor) are tested in a fun game atmosphere and there's a Hall of Fame where winners get to put their names. A simple tune is repeated with changes in characteristics each time, which must be identified by competitors to score points. I thought it a good music teaching tool.

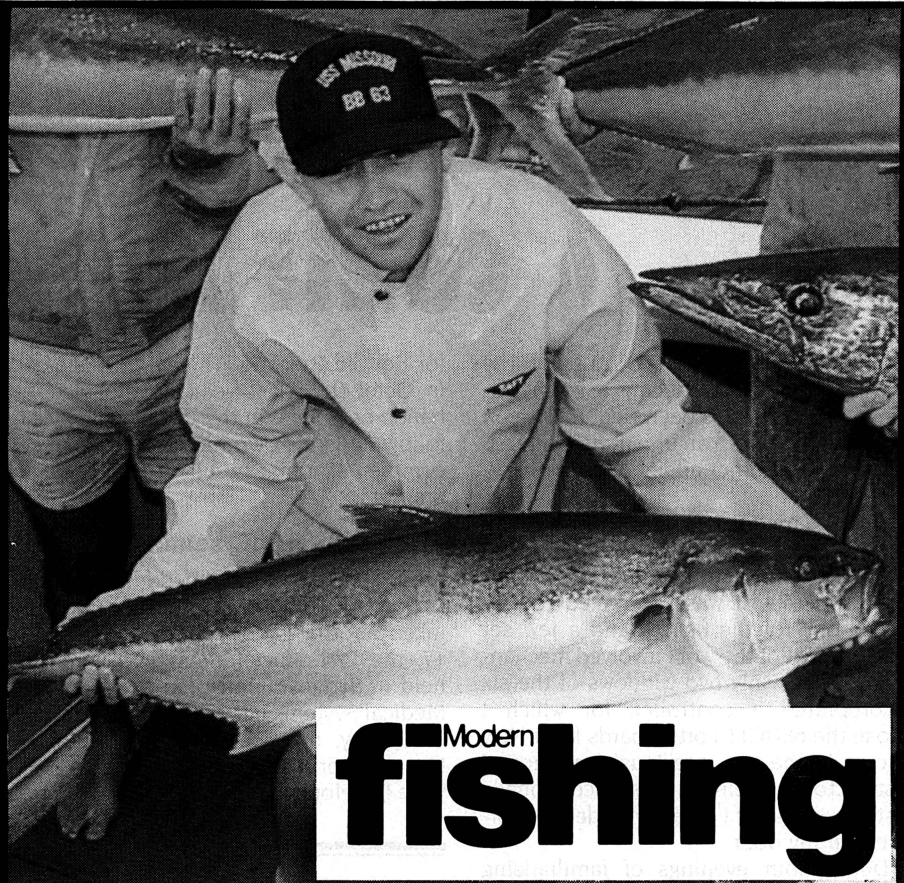
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GARY
LUKE

Embedded controllers

MY APOLOGIES TO ALL for the break in producing a Forth column. I have been tied up with an interesting job with an urgent deadline, so had to put all other affairs onto the backburner.

Each Christmas in the windows of Myers department store in Melbourne are a few scenes from a fairy tale. Last year it was Cinderella. I was contracted to animate some of the figures and a few set pieces. Most of the work involved mechanical devices. Only two windows of the six incorporated a controller, for which I chose the 68HC11 Forth boards from New Micros in the USA, previously mentioned last October. Delivery was exceptionally fast. A week after I faxed an order they arrived on my door.

During four evenings of familiarising myself with the manuals and the boards, I had the code for one window already roughed in, including an interrupt driven real time clock running in the background, and had worked out the layout for suitable relay drivers for controlling the motors and the opto isolators for the micro-switches which sense the position and limits of travel for the moving set pieces. All further development was done on the set itself.

Because of the differences between the positioning of the machinery in the workshop and on installation in Myers, a few changes had to be made in Melbourne. If the controller had been designed around electronic hardware, I would have had to add two timers and a few extra logic gates while cramped in a corner out of the way of the carpenters, in a foreign city remote from my workshop, within three hours. By using an embedded controller, I was able to plug in my laptop at a terminal and alter the software. Why do Forth programmers always brag about the speed of development and the malleability of Forth?

Another embedded Forth user is Klaus Veil, who has developed a programming language called THInC for the 8051 family of computer chips. I mentioned his work with medical monitoring equipment in a previous column (but misspelled his name as Kurt Weil, who wrote the music

for Bertold Brecht's 'Threepenny Opera'). In October of last year, he organised a hands-on course in the use of THInC. The following is his own report of the course, comments from myself <are in angle brackets>

The Forth/THInC seminar

THE FORTH-BASED embedded controller software development system, THInC, has taken another step forward. On October 17, the first official training course was held in Sydney. Sponsored by Macquarie Medical Systems (MMS) and the University of Sydney, nine participants attended a two day workshop titled 'Productive Software Development by Scientists and Engi-

*The proven Forth
operator interface, the
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Oriented Programming
(OOP) are combined in
'THInC'.*

neers'.

The seminar focused very much on Forth as a word based language. Typing an available word at the keyboard and immediately seeing the results has obvious advantages. When the participants assembled a 'wish-list' for a productive development system, 'immediateness', 'direct control' and 'high speed/low cost' were ranked highest. The proven Forth operator interface, the tight code of modern compiling and the advantage of Object Oriented Programming (OOP) are combined in 'THInC'.

The first day of the workshop (held at Sydney Uni, Applied Physics Dept) gave an introduction to Forth and Forth-like languages. Dr Paul Walker explored the pro-

cess of creating software code as 'bridging the gap between a problem and its solution'. He stressed that Forth allows this 'bridge-building' to happen in the domain of language applicable to the problem. In that light, programming can be seen as building a specialist language to solve the given problem.

As in normal English, the user/programmer can define new words in terms of already existing ones – usually via the 'colon definition', for example: `SQUARE DUP * ;`. As readers of this column will be aware, the stack is the mechanism for passing parameters rather than using bracketed parameter lists as in the more traditional languages. This combined with suitable choice of names allows the development of quite readable code 'sentences'. This makes the perennial subject of readability and maintainability a lot less daunting and is a remedy to Forth's reputation as a 'write-only' language.

<This bad reputation may have come about as a side effect of the desirable interactive abilities of Forth. For a language which needs extensive compiling before running, the ease of hitting a couple of keys to test and re-test smaller modules of an application don't apply. For instance, I would rather type 'A3F' 20 times in an hour than 'ACTUATOR-3-FORWARD'. And much rather type 'A3F 5 SEC A3K ?H' than 'ACTUATOR-3-FORWARD 5 SECONDS ACTUATOR-3-KILL ?HOME' during development of a robotics application. If I didn't have that ease of testing interactively, this consideration would not arise. With F-PC, the word ALIAS now allows me to define the words using the full names, and to also define aliases for use during development at the foot of the source code.>

The seminar participants used THInC on their PCs to achieve immediate control of the screen display format, define higher level words, and to define defining(!) words. These allow the programmer not only to create custom data structures (as in C), but to also fully define all the details of the actions on these objects. At the end of the first day, the budding THInC programmers were able to acquire simulated scientific data and display it graphically in

CRAVEN IMAGES (Computers)

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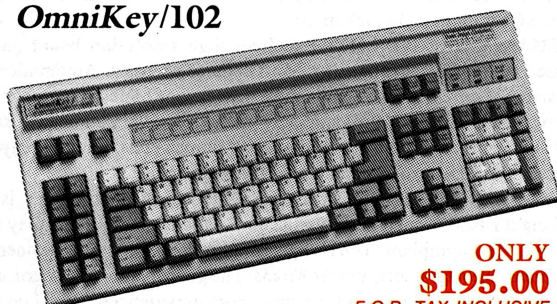
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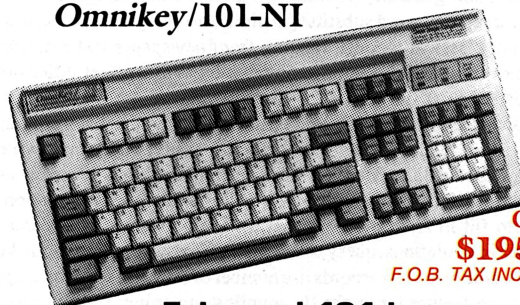
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Below are some of our latest releases:

PC1002 MINIWORD: Entry level word processor with all the necessities like word wrap, block move and delete, justification and centring, search and replace, and more. Described by the author as "The little word processor you can learn in minutes, this program is ideal for small text files, and those who don't need the complications of more powerful packages to write.

PC1033 READABILITY PLUS: Menu driven program is much more than a classical style checker. In addition to evaluating your mixture of long and short sentences, identifying wordy, complicated, and difficult sentences, computing readability indices, and generally pointing out good writing structure. It also produces graphical reports, word substitution hints, and compares your writing style to 9 different classical models, ranging from newspaper and magazine articles to technical manuals. Reads files created by WordPerfect, Microsoft Word, and standard ASCII files.

PC1203 EZ-FORMS DATABASE: Powerful form based database program that handles all forms of information quickly and easily. Reads and writes industry standard .dbf dBase files. Handles over two billion records, and includes a full tutorial for the database novice. Allows for unlimited relational lookups with auto fill in from other databases, on line manual with context sensitive help, field calculations, query, seek, find, and browse modes to quickly scan your records, ability to view records in a number of different ways, multiple indexes, quick report feature for on the fly counting, summing, and averaging, duplicate search mode, keyboard macros, field validation, and much more. Requires 640K RAM and a Hard Disk.

PC1404 EZ SPREADSHEET: Easy to use spreadsheet program for those who don't need all the bells and whistles of the more advanced and complicated programs. Will handle spreadsheet with up to 64 columns and 512 rows, more than enough for most uses. Will print to almost any printer, and even includes sideways printing utility for use with Epson compatible dot matrix printers. Includes a number of sample worksheets to help learn the uses of the program.

PC1631 WINDOWS WINCHECK: Chequing and savings account manager with cheque writing capability designed to run under Windows. Handles multiple accounts and up to 32 recurring items via a table. Gives monthly register statements or exports Lotus 123 or Excel files. Has transfer of savings to or from cheque transactions. Keeps a note field on each transaction and has a search capability for those notes. Requires Microsoft Windows 3.0 or higher.

PC1689 AMORTIZE IT: Full powered amortization program for home and professional use. Program allows you to select payment and compounding periods, examine the effects of extra payments and skipped payments, adjustable interest rate, and other variables. Reports can be produced displaying payment, interest, and principal totals for fiscal, calendar, or loan years. Detailed as well as summary reports are available. Interest due can easily be calculated, and accelerated payment schemes can be designed. Balloon payments can also be accounted for.

PC1902 PERSONAL CALENDAR: Memory resident program displays a three month scrollable calendar, a running analog and digital clock, and a time oriented event list and text note list on screen at the touch of a hot key combination. A modifiable historical tracking is made of events and notes, all of which can be printed. Warnings and alarms tell you something is pending or overdue. Events can be scheduled in a number of ways, including one time, daily, weekly, bi or multi weekly, specific week day of the month, quarterly, or annually. They can be repeated indefinitely, or for a specific number of times. Can be used as a TSR where it uses only 6K of RAM, or as a stand alone application.

PC2138 MONUMENTS OF MARS: From the people who produce the KROZ programs, this adventure game makes great use of graphics and sound to provide great game play. In this game NASA has sent several manned missions to explore the mysterious monuments, but every mission has ended in disaster. You are the final hope. You have been chosen for a special mission to discover the secrets of the Martian monuments. The game begins just after your ship lands on MARS, near one of the monuments. In this arcade/adventure game you must survive 20 unique and challenging levels filled with puzzles, traps, creatures, and useful artifacts. Features include save/restore, high score chart, keyboard configuration, and much more.

PC2624 EGA SANDIEGOPLOY: Excellent high resolution board game loosely based on Monopoly, but using San Diego as its basis. Automatically tracks the status of property and money, to keep everyone honest. Game can be saved and resumed easily, and the game play makes this a very addictive game for up to 8 human players, or any combination of human and computer players up to eight. EGA/VGA graphics and Hard Disk required.

PC2629 EGA BATTLE FOR ATLANTIS: The object of the game is to capture all eight islands which make up the atoll called Atlantis. You play the army known as the Olympians. The computer plays the other three opponents, the Calydonians, the Argonauts, and the Titans. The game is simple to learn, and offers different levels of play as you become more experienced. Based on the classic game of RISK, many new elements have been added to make it interesting and different. Requires EGA/VGA graphics system.

PC2633 EGA CAPTAIN KEEN VOL 1: Epic real time arcade style adventure game with exceptional graphics. You play the role of Billy Blaze, searching through the universe for parts to fix his spaceship. This program has received rave reviews overseas, and is one of the best arcade style games available for the PC according to many reviewers. Can be played with joystick or keyboard, program features save and restore, multiple levels of play, and very smooth screen scrolling and updating. Requires 640K RAM and EGA/VGA graphics.

PC2634 EGA DARK AGES VOL 1: Arcade adventure game which takes advantage of EGA and VGA graphics systems, and also supports Ad Lib and Sound Blaster music cards. In the game you are the Prince of the Great Kingdom, who as a child watched your father die at the hands of Garth, a power mad warlord. However you have been raised by an old warrior, and the time has come to regain your heritage, and free the Great Kingdom from the dark ages of Garth. Requires 286 or higher computer and EGA/VGA graphics.

PC3061 MENU-EZX: Easy to use hard disk menu system. Designed for novice users, this program, will allow you to easily produce a menu driven environment for your PC. 100 menu items are available with either direct entry to the program, or the option to enter optional parameters to the program. Uses only 4K of RAM to operate, leaving plenty of RAM for your applications. Includes password protection, internal full screen editor, and screen blanking.

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PC3123 BOOT.SYS: BOOT.SYS makes it possible to display one or more menus at boot up time and to have different parts of CONFIG.SYS and/or AUTOEXEC.BAT executed depending on which menu option you have selected. Program features easy installation, up to nine options per menu, and a freely definable prompt area at the top of the screen, up to 25 consecutive menus, each defining a different aspect of your system configuration, up to 25 levels of nested menus, user definable time out and default options for each menu, and much more while using less than 200 bytes of resident RAM.

PC3127 BLANK-IT SCREEN SAVER: Memory resident screen saver program that has several features that make it stand well above all other screen savers, commercial or shareware. Blank It will black out the computer display after a certain timeout so that the computer screen won't become burned in. Valid timeouts can be specified from 1 to 59 minutes. As long as the keys are being pressed, or mouse is being used, the screen will remain on. Once the timeout period is exceeded since the last key is pressed the screen will blank. When you press the space bar, the screen will reappear. Blank It differs from others in that it discards the key that is pressed to reactivate the screen so that it will not interfere with the program functioning. Also you can press a hot key at any time and blank the screen, or disable Blank It using another hot key combination. Finally blank It only takes up 528 bytes of memory, less than 1K with all its functionality.

PC3148 TSR UTILITIES: Excellent collection of Terminate and Stay Resident utilities designed by an Australian author. Programs include Alarm which provides a method for sounding an alarm through the speaker at a set time. ASCII provides a number of tables including ASCII table, shift mask table, box character table, and an extended key table. CAPS that displays on screen the status of the CAPS LOCK key. Clock to display the time on screen, KEYCLICK, KEYINFO, PRN2FILE allows you to send printer output to a disk file. RAMVIEW to view the contents of RAM on screen. Screen capture and Screen Save, Slow Down and many more. Also included is RESHELP a memory resident help system which provides information on all the TSR programs, as well as providing a comprehensive resident help on Assembly Language use.

PC3174 FLEXPLUS BACKUP: Flexible, easy to use hard disk backup system that takes a logical, simple, and unique approach to the backup problem. With a conventional backup system you are required to take a full backup as well as incremental backups. With FlexPlus you need to only take a full backup once, and then all subsequent backups are placed on the same backup disks, giving some long term speed increases, simpler file restoration, and an improved backup management capability. Features include the ability to allow selective backups, both globally and by directory, a file management system that keeps track of which files have been backed up, and informs you if any files have gone missing from the hard disk, file compression to reduce the number of disks required for backup, an alarm system to warn you when a backup is due, and much more.

PC3274 NEWKEY: Keyboard enhancer that simplifies the entry of common keystroke sequences by allowing these sequences to be assigned to any key desired. Once assigned to a particular key, whenever that key is struck the predefined sequence of keystrokes will be returned in place of the struck key. Newkey allows customisation of software packages, ready creation of boiler plate passages, help menus, keyboard redefinition, cursor speed up, screen blanker, extended keyboard buffer, and several other useful purposes. Features include a full featured macro editor, date/time macro facilities, easy customisation, and much more. Includes very comprehensive documentation.

PC3300 WINDOWS MAGIC SCREENSAVER: Configurable screensaver utility written specifically for Microsoft Windows 3.0. If your computer is left unattended MAGIC fills your screen with colourful animation, as well as providing password protection for your computer. Program is fully Windows 3 compatible, handles communications ports, and provides password security even across reboots. Saves monitor from damage due to image burn in. Easy to configure, this application is a must for Windows users. Requires Microsoft Windows 3.0 or higher.

PC3432 DISK SPOOL II: Program sets up a print spooling environment where printed output is spooled to disk rather than memory. Program works with virtually all applications, and uses a pop up menu which controls starting and stopping of spooling and printing, displaying the contents of the spool file, changing printing ports, and more. Can be set up to spool data being sent to any port including serial and parallel ports. Attributes such as number of copies, output port, and whether to save the file after printing can also be set. Program also has the ability to monitor the COM ports for incoming data, and spool the data to disk in the background. RAM requirement can be set as low as 14k.

PC3461 ESF'S LASERJET FONTS: This is a collection of 21 soft fonts for any HP LaserJet or compatible laser printer. The fonts include Helvetica and Roman 10 and 12 point in medium, bold, and italics, 18 point bold Helvetica and Roman, Century Legal 12 Point, Script 12 point, Flourish 12 point, Broadway 18 point, Keycaps 10 point, Dingbats 18 point, and Greek 10 point. The package also includes utility programs for downloading and printing sample sheets of fonts. Printer drivers are included for Wordperfect 5.0 and 5.1, Word 5.0, Ventura, and PageMaker. All the fonts can be installed from a simple Install option.

PC5007 DESKTOP PAINT: If you use a desktop publishing package, or work with graphics files then this program is an essential program. This graphics editing program handles monochrome files in MacPaint, GEM/Ventura IMG format, PC Paintbrush, TIFF, and WordPerfect Graphics (WPG) formats. Desktop Paint will allow you to create and edit pictures of any size in any of these formats. All of the standard features like cut and paste, move, spraycan, lines drawing, erase, box, circle and ellipse drawing, fill, undo, rubberband, zoom, invert, flip, rotate and more are included. Multi line text in a choice of fonts from 6 to 36 point can be entered, and the registered version includes a selection of other fonts. Prints to Epson compatible dot matrix printers as well as HP Laserjet and postscript laser printers. Requires 512K RAM, Hard Disks and a mouse.

PC5303 GRAPHICS WORKSHOP: Major upgrade to this popular graphics conversion program. Program allows you to convert between any two image file formats, view files in any of the supported formats, print image files to a laser or dot matrix printer, reverse monochrome image files, convert colour images into halftones, dither colour images to black and white, rotate image files in ninety degree increments, flip images vertically and horizontally, and scale images up or down. Graphic Workshop features an intuitive user interface. It offers batch processing for handling multiple files. Supports MacPaint, GEM and Ventura IMG files, PC Paintbrush, GIF, TIFF, Encapsulated Postscript, WordPerfect Graphics WPG, Microsoft Paint, IFF/LBM Deluxe Paint, BMP used by Windows 3 and PIC formats. Takes advantage of extended or expanded memory. Requires 512K RAM and a Hard Disk.

PC7308 ROOTS MASTER: Powerful, yet easy to use program for organising family history information. It lets you build a file of relatives so you can view and print ancestors, descendants, family groups, alphabetical lists, birthday lists, longevity analysis, and more. Roots Master allows you to easily enter name, address, birth date and place, marriage date and place, death date and place, and sex for each relative. Once entered you can easily tie relatives together with the proper father, mother, and spouse relationships. Errors can easily be corrected, and warns you of possible duplicates. Program prints out family history worksheets which can be used to help collect family history information. Requires 384K RAM.

PC8507 TUTORIAL WRITER: Authoring system for Computer Assisted Instruction or Computer Based Training. The educator needs no programming skills to produce tutorials which feature hypertext, menus, help systems, pop up windows, tests, quizzes, colours, sounds, graphics, and much more. No need to learn a programming language as this program handles all the hard work for you. Consists of an integrated development environment in which tutorials are written, and a display or run time module which you distribute with your tutorials. Requires Hard Disk.

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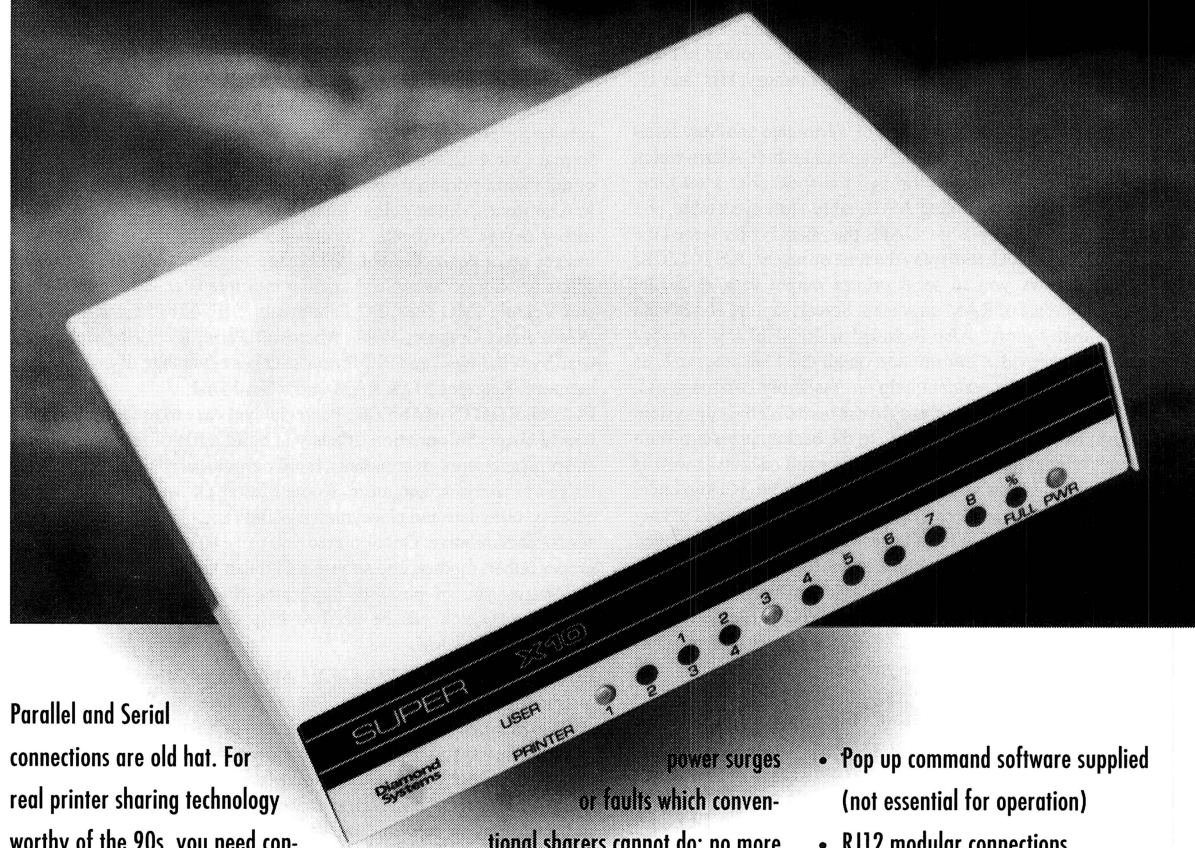
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**Diamond
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a window scrolled by the cursor keys.

The second day (held at Macquarie Medical Systems) started off with Klaus giving a brief overview of the products that have been programmed in Forth and THInC. These include the 'Asyst' scientific software package, comprehensive industrial control products, and a number of medical products manufactured by MMS. To show the efficiency of interactive program development, MMS engineers presented two case studies which demonstrated that it was possible to control unknown hardware within hours rather than days! <Asyst was reviewed in *Wireless World* January '91.>

As most of the participants had an 8051 embedded controller background, the 80552 derivative processor had been chosen for the training. Using THInC552 it was possible to type high-level source code on the PC and instantaneously execute it on the target 80552! By lunchtime, LEDs were happily blinking on the target hardware. A very powerful feature of THInC is the automatic handling of data classes. This removes the need for the programmer to keep track of when to use 'C@', '@', 'D@', 'Q@', 'P@', 'PC@', and

so on, with a multiple overloaded '@' operator. This is essentially the effect of Object Oriented Programming.

<C-8bit, D-16bit, Q-32bit, P-port/16bit, PC-port/8bit, are prefixes for different data classes. To hide the variations, an extra 'class byte' can be included in the word at the time of defining a variable or constant or named port location. Access to these in

The seminar focused very much on Forth as a word based language.

later code is by a simple @-fetch or !-store operator without need of any prefix. The run time code uses a case structure to decide how to handle the data. For a more extensive exposition of this idea of abstract data classes, an article by Dick Pountain appeared in *Byte* of August 1986. He also wrote *Object Oriented Forth* which should be available by special order from a technical book shop

or from FIG USA.

Klaus has taken a different tack to hide and handle data classes. He uses a vocabulary for each, which contains all the operators ('methods' in OOPs-speak) relevant to that particular class. His code switches vocabularies so that only the required method is available for execution. This is an interesting way to maintain 'class libraries', which is becoming the OOPs buzz word of the '90s.>

Interrupts and multitasking support were also outlined, and by the end of the session a working 2-track system had been programmed.

Given the interest in this course, it was decided to repeat it. Anyone who would like to participate can contact Klaus on (02) 692 7987. Thank you Klaus.

This month seems to have been taken over by embedded controllers! Next time when these are not so dominant in my own work, we will get back to short sample words and programs for beginners and others. Incidentally, I have heard on the grapevine that Forth is being used on the production lines of Sanitarium and of Ardmona, and that Forth is at the bottom of QuickBasic. □

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As Australia's own PC magazine, we pride ourselves on our local content. In maintaining that tradition, **Your Computer** would like to hear about your experiences with personal computers and pass them along to our readers. We are currently seeking casual and regular contributions covering the use of PCs in small businesses. (Note: we are not seeking standalone product reviews at this time.) Articles should be 1200 to 1500 words long and take the form: problem, investigated solutions, implemented solution, and give the reasons behind your decision. Our style is quite informal – check out the articles in this issue.

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MAKING YOUR MICRO WORK

REALIZER

FOR 'CASUAL' WINDOWS PROGRAMMERS

Jeff Richards reports on a complete Windows programming toolkit for Basic programmers, which makes creating Windows applications quick and easy.

AS WINDOWS BECOMES established as the graphical user interface (GUI) of choice for DOS users, the range of Windows applications continues to grow. And as the number of available software packages grows, each manufacturer must try to differentiate their product from the crowd in order to try and make an impact. The number of currently available programming languages for Windows hardly constitutes a crowd, but Realizer, an interpretive Basic from Within Technologies, already has some stiff competition. However, distinctive features of Realizer give it a good chance of making an impact in certain areas of the marketplace.

Basic has traditionally been an interpreted language – that is, the commands that constitute the program are translated into machine instructions each time the program is run, as it is running. Programs written in a compiled language, such as C, are translated into machine instructions as a separate step before the program is run, and, once translated (or compiled), there is no need to re-compile it unless the program is changed. This usually means that programs written in an inter-

preted language are easier to write and execute, but much slower to run. The simplicity of Basic programming, and the ease of using an interpreted language, has established Basic as an important language for casual PC users or for simple, one-off programming tasks.

That there could be such a thing as a 'casual' programmer for Windows, or that Windows programs might be 'simple', would be a surprise to anyone who has tackled Windows programming through the official approach – the Microsoft Windows Software Development Kit. But the need for easy access to a programming language is just as important for Windows users as it is for those using DOS, and it is this need that Realizer is aiming to meet.

At the simplest level, Realizer can be used like a traditional Basic such as Basic or GWBasic. Starting Realizer brings up a text edit window into which program lines are entered. The language supports a Print statement, which simply sends output to a special window called a print log. The only significant difference at this level is that the print log is not visible by default, and must be explicitly opened before the output can be viewed. However,

beyond this level the differences start to become very apparent, and the typical Basic programmer will have a few adjustments to make in order to come to grips with Realizer.

It is in its treatment of variables that Realizer differs significantly from QuickBasic or Turbo Basic. Realizer supports only two elementary variable types: numbers, which are all double precision floating point; and strings. A third type – date-time – is a form of number. Any variable type can be an array, although only single dimension arrays are currently supported.

Variable names do not take a trailing type indicator such as '#' for numbers and 'S' for strings, and variables are not declared before they are used. Instead, the type of a variable is determined dynamically when it is first used. Similarly, arrays are not dimensioned before use, but are allocated as the subscripts are referenced. This rather casual variable typing seems at odds with the C and Pascal influences that are apparent elsewhere.

The handling of arrays in Realizer is much more powerful than previously available in Basic. Arrays can be used almost like a single variable – for instance,

the Sin function, when applied to an array, computes the Sin of each element of an array. However, array indices cannot be less than one – an odd restriction considering the otherwise powerful array manipulation facilities.

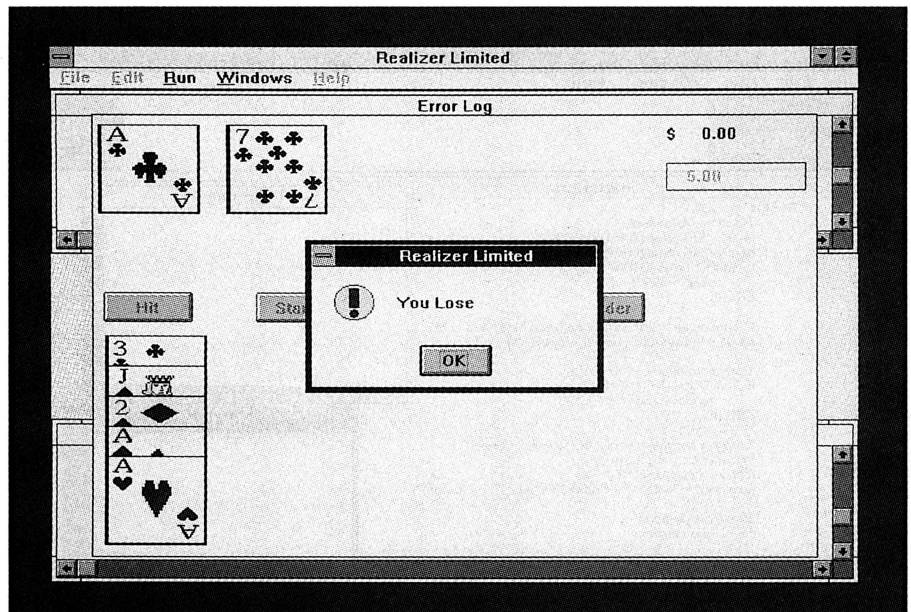
There are many other differences from GWBasic or QuickBasic that the Realizer programmer will have to cope with. There is quite a bit of variation in syntax, some of which appears capricious, such as the rearrangement in the order of the arguments in the Instr command. The Let keyword, which is optional in the assignment statement for most modern versions of Basic, is not supported at all in Realizer. Realizer adds a few other differences – such as not supporting line numbers or labels in any form – that further emphasise just how far Basic has advanced from its earliest form. Indeed, Realizer could almost be called a variant of Pascal rather than its present description as a variant of Basic.

Realizer supports Sub and Function routines in a manner similar to QuickBasic, although there seems to be no means of declaring these routines, and therefore they must precede the main routine in the source code. It also supports multi-line If statements, Select/Case and While loops, although End While is used instead of Wend. As there are no line numbers or labels allowed, the Goto and Gosub commands are not supported – they get a terse 'Not structured' comment in the list of those commands that differ from QuickBasic.

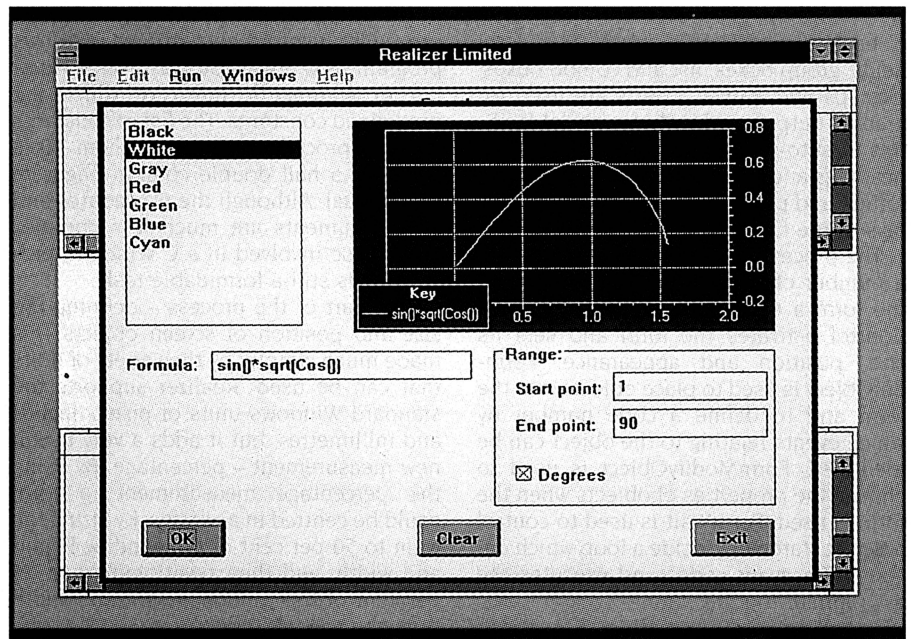
The scoping of variables and procedures is an important characteristic of any language that claims to be well structured, and Realizer implements a set of scoping rules that are roughly in accordance with modern practice. Variables implicitly declared within a procedure (including the un-named main procedure) are assumed to be available only to that procedure and all procedures declared within that procedure. Variables declared as local are available within the defining procedure only. Procedures can be defined within a procedure, and procedures can be redefined at any time. Procedures defined within a procedure go out of scope when the defining procedure terminates, and a redefined procedure that goes out of scope reverts to the previous definition.

The Windows interface

BUT OF COURSE the largest difference between traditional Basic and Realizer is in the implementation of the Windows interface. Until the Windows interface exten-



The sample blackjack program might not pay out on a 5-and-under, but it is a good example of the power and simplicity of Realizer.

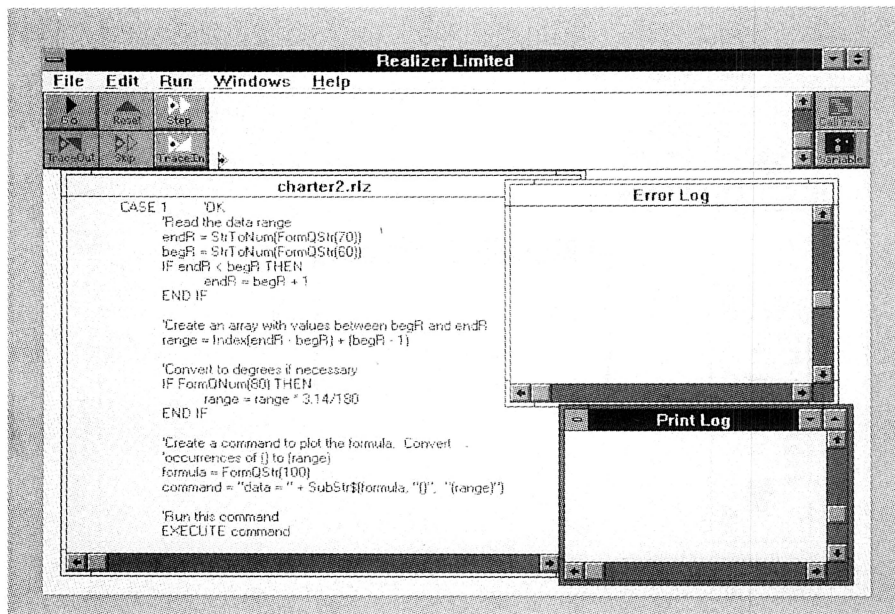


The sample graphing program demonstrates the use of the Execute function. In this case, the equation supplied by the user is applied to an array, so all points to be plotted are calculated in a single statement.

sions are utilised, a Realizer program is barely different from running QuickBasic or Turbo Basic in a window.

Realizer utilises a series of objects as the means of implementing the Windows

interface. The available objects are Logs, Forms, Charts and Spreadsheets. Logs are simple text output windows. Forms are the most common type of window, and can contain the typical Windows objects



The three main windows of the Realizer desktop – program window, error log and print log – together with the debug icons and work area.

of buttons, checkboxes, labels, text entry fields, group boxes, list and combo boxes, bitmaps and frames. Charts are used for graphic output, and include special facilities to auto-scale, plot arrays and display headings and an index. A spreadsheet will format and process numeric and string arrays in the familiar spreadsheet style.

The process of creating a form involves a number of commands. FormNew gives the form a name and style, while FormControl activates the form and sets its size, position and appearance. FormSetObject is used to place objects into the form and to define a code number by which events relating to the object can be identified. FormModifyObject is used to change the properties of objects when the form is used. FormWait is used to control a Select statement inside a loop which decodes the event codes and executes the appropriate routine.

An alternative to creating a loop and decoding the events indicated by the FormWait function, is to associate a procedure name with an event. This is done with the FormSetProc command.

Menus require a similar set of commands, including MenuSelect, MenuControl and MenuSetCmd.

Creating forms and menus

THE PROCESS OF creating forms and menus, defining objects for the forms and processing messages, closely parallels the

procedure involved in creating a Windows program in C. Each routine takes a number of arguments, many of which are predefined constants. The list of constants and the procedures that use them takes four and a half double column pages in the manual. Although the procedures and their arguments are much less complex than those involved in a C Windows program, it is still a formidable task.

One part of the process – defining the size and position of screen objects – is made much simpler by the variety of units that can be used. Realizer supports the standard Windows units of pixels, inches and millimetres, but it adds a very useful new measurement – percentage. By using the percentage measurement, a form could be centred in a window by sizing the form to 50 per cent of the window height and width, and then positioning it at 25 per cent of the window height and width from the top left corner.

As an alternative to explicitly describing each form and object, Realizer is supplied with an interactive graphical form design utility, written in Realizer, which creates lines of program code that can be pasted into the application being developed. This simplifies the form construction procedure enormously.

Realizer programming is also simplified by the availability of predefined standard objects. For instance, there are dialog boxes for selecting printer fonts, configur-

ing the printer or accessing a filename that can be invoked with a single command. There is an extensive set of array procedures, including statistical functions and an interesting pair of procedures that will compress a sparse array into two smaller arrays, and then expand the two arrays back to the original sparse array.

Realizer facilities not usually found in Basic include a series of date and time management commands, a very extensive range of print formatting codes, statistical functions, and a file read mode that handles Excel or Lotus spreadsheet files. The language also supports two commands that I have often wished existed in Quick-Basic: the Execute command which executes a string as if it were a line of code, and the Sprint command which does a formatted print to a string.

Commands exist to copy text to and from the clipboard, as well as establishing a Dynamic Data Exchange (DDE) session in either client or server mode. Access to functions in the Windows Application Programming Interface (API) is through the External command, which takes a list of variables and matching types to which they should be converted before the routine is called. Other Windows or DOS programs can be executed, and DOS commands can be executed by passing arguments to an invocation of command.com. A database engine that can be called directly from within Realizer is also available.

The package does contain a few oddities, and at least one bug. Variables are retained in the variable name table even when the window containing the program in which they were defined is deleted. This means that if you are running a series of programs, then the variable name table rapidly fills up and has to be manually cleared out. I couldn't find any procedure to clear it in a single command, and simply deleting each item from the bottom up locks up the whole machine – Windows and all.

The manual

THE REALIZER MANUAL includes extensive tutorial material, and an adequate reference to the language. The manual mentions that additional Windows references may be useful, and, as with most Windows programming languages, some knowledge of the Windows API helps to make the whole thing more understandable. There are a number of sample programs included, and help for any command or keyword can be obtained with a single key stroke. Realizer programs are

simple ASCII text files, so they could be prepared with any text editor, and can be printed using standard Windows facilities.

Realizer is distributed in Australia by Software Suppliers, but it is being marketed using an unusual concept. A limited version of Realizer is available as a book, *Windows 3.0 for Basic programmers*, which is available over the counter at major book stores. The software included with the book is a limited version of the package with a restricted number of variables per program, restricted number of elements per array, and limits on the number of logs, forms, fonts, files and other objects that can be used. If you can live within the limits, the limited version is very good value.

Whether the full version is also good value is a more difficult assessment. Obviously the main competition to Realizer is Visual Basic, and the Microsoft product is not only cheaper, but appears to be more complete. But the impression is not strictly correct, mainly because Visual Basic has followed the line established with QuickBasic much more closely than Realizer has. Visual Basic provides an ex-

Product Details

Product: Realizer
Distributor: Software Suppliers
 7 Avon Road,
 North Ryde NSW 2113
 (008) 023 327
Price: \$595 from most software retailers. A sample disk (including sample code) is also available from Software Suppliers.

Wherever it is that Realizer draws its market from, it is a significant contribution to the growing list of Windows programming languages.

cellent forms design facility, and the option of creating stand-alone executable files (albeit, accompanied by a massive DLL). Realizer provides greater functionality with its array manipulation commands, greater range of standard objects, chart and spreadsheet facilities, and the availability of custom controls. Also, Realizer is easier than Visual Basic to use straight

out of the box, and requires less of an adjustment from the traditional Basic programming model.

I suspect that Realizer might initially be of interest to Basic programmers who don't expect to get heavily involved in Windows development, but have an interest in experimenting with a Basic interpreter within Windows. But Realizer will also be interesting to developers using other languages who would like to work in an interactive environment that is a fairly complete implementation of modern structures and scoping rules, and which provides a very comprehensive set of development tools for business applications.

Wherever it is that Realizer draws its market from, it is a significant contribution to the growing list of Windows programming languages, and the new competition will certainly be of benefit to Windows programmers and users alike.

Windows 3.0 for Basic programmers (including toolkit disk) by Michael Hyman, Addison-Wesley, Reading Mass., 1990, is available from Dymocks and most major book stores. RRP is \$48.95. □

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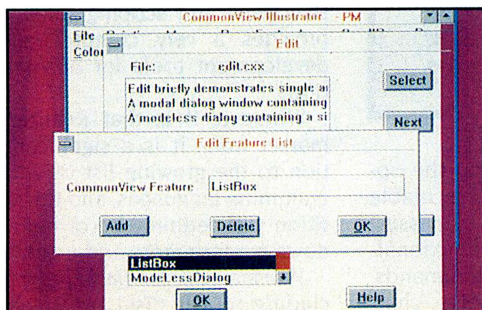
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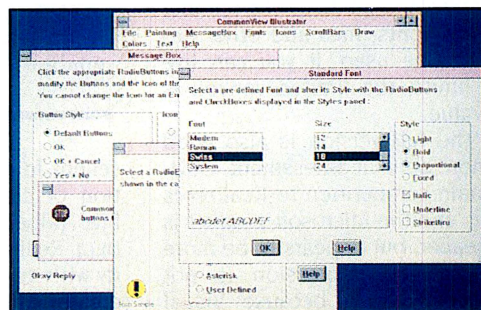
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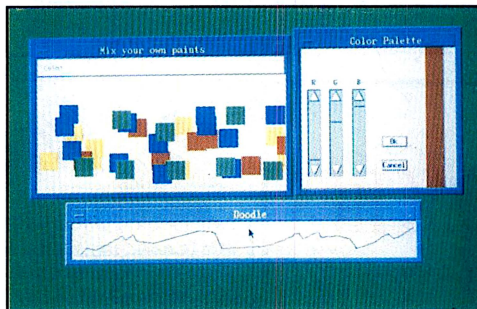
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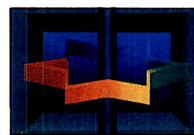
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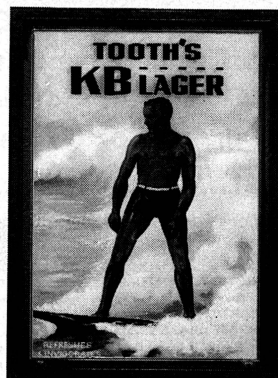
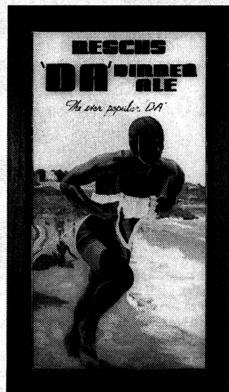
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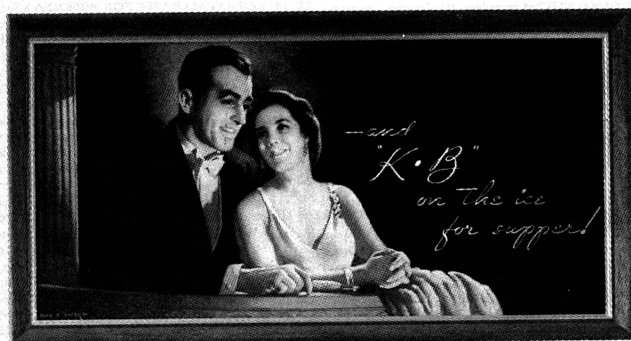
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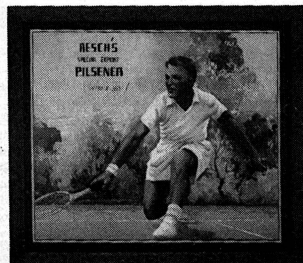
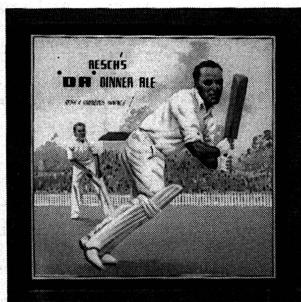
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**STEVE
O'BRIEN**

Revolution in education

BLITHELY FOLLOWING humankind's desire to capture, categorise and classify everything that moves, and most things that don't, I have typically bottled computer users into three different jars. The 'absolute novice', who has just had a religious experience in working out what that big red switch on the side does – and is now waiting for the second coming; the 'aspiring acolyte', who has developed a good working knowledge of a number of programs, however the details remain elusive; and the 'power user', who keeps his '486 in a fridge ('cryogenic storage device' in their parlance), nestled amongst the Schweppes, in an attempt to raise the clock speed from 50- to 100MHz.

Of course, there are numerous levels in between. I tend to look upon myself as a half acolyte, half power user – one, unfortunately, with a fridge that goes on the blink in summer. Some of my best friends suffer similarly, but only worry about the warm beer, whereas I end up with mouldy floppies.

Watching the computer industry develop has been truly awe inspiring. Like seeing a fantastic extravaganza, an Aida to the power of 10 come to life – it is mind boggling, even from a distance through fogged opera glasses. Meeting the players on that stage, however, can be an even bigger thrill.

Jean-Pierre Paillet

ENTER STAGE LEFT Jean-Pierre Paillet. Although not someone you would stop in the street for an autograph, his career has taken him light years from the highest power user classification. This is a man who understands the nature of computers to a point where each has nurtured the other almost symbiotically.

Unlike the modern-day heroes of the PC revolution, Jean-Pierre was around when electronic circuits were carved in stone, when a 500 word memory – 8Kb, if you're lucky – was big news. In fact, it was big enough to develop a simulation of the first supersonic transport; feasibility studies that later proved the viability of the Concorde.

Other notable projects have included the formation of the Speech Research Group. Founded with two colleagues, SRG was dedicated to the development of speech processing instruments on mini-computers, and went on to produce the first real-time software-only speech synthesiser in the world.

He has also worked on AI-based products for natural language interfacing. This is founding research for software that will eventually board the Freedom Space Station, if it ever takes off. More recently

specifically so that every single student coming to Dartmouth College would have something to learn.

'The only problem with this is that the computers were, and still tend to be, too expensive to risk having the students take them home. So what is needed is a very functional, very basic, no frills unit.

'Everybody entering school at the age of six should be given one of these, and then give it back when they leave primary school. They are provided with a more sophisticated model upon entering second-



[Jean-Pierre Paillet] has set his sights on Queensland as the ideal place to start a revolution in education, a revolution that will, if he has his way, change the nature of schooling forever.

though, he has set his sights on Queensland as the ideal place to start a revolution in education, a revolution that will, if he has his way, change the nature of schooling forever. I managed to sit him down for an hour to get the full story.

Computers in education

'COMPUTERS IN education are nothing new. Dartmouth College was the first to make them compulsory. A spin-off from this was the Basic programming language, which was developed by the Dean of Arts

ary school.'

So what kind of computers are these? According to Jean-Pierre they will be made by stitching together existing technology to create a new, rugged multimedia PC priced between \$1000 and \$2000.

In essence, the idea is to take a '386 motherboard with as small a chip count as possible. Hook on the capabilities of a card like the SoundBlaster Pro with its CD-ROM interface, polyphonic voices and sound input. Mix it all up with a CD-ROM drive, a 1.44Mb drive, a couple of mega-

bytes of RAM, and a VGA-LCD screen.

This is not enormously different from the recently announced IBM multimedia PC, but it is the addition of full-motion video through DVI that really sets this machine apart from the rest. DVI (Digital Video Interface) is a standard for the conversion of analogue TV broadcasts into a digital format. It is supported by dedicated chip sets from Intel that can do this in real time, and it is fast becoming a de facto standard in this area. DVI is to TV, what CDs are to the music industry. Information can be stored in a compressed format and transferred from one media to another with absolutely no disintegration in the quality of the images and/or sound. Although electronic 'noise' is an inherent part of any electrical system, digital input and output negates any ill effects whatsoever.

But why should anyone want DVI in their computer anyway? Perhaps one of the most trite examples is the suggestion that watching the Cricket in a window on your PC is something everyone would want to do. Looked at from another perspective, it brings the entire, enormous realm of broadcast TV into your PC.

But this technology also goes far beyond that. The actual answer is found in just one word – 'interactivity'. This is, of course, a major characteristic of computers, but not of TV. According to *Digital Video in the PC Environment* (McGraw Hill/Intel), in such a rich interactive environment, audio and video are simply two more kinds of output that we can get from a computer – and we will expect to be able to control them just like any other.

What is needed?

THE PC JEAN-PIERRE has in mind has applications in many spheres from sales through to on-site training. However, it is in education that he sees it establishing its first foothold.

'You have to organise an educational system for a scattered population, and there is never enough money to do it properly. Pulling people out of their environment and sending them to cities for education, decreases their learning potential by up to 50 per cent solely through the displacement effect.

'My issue from the beginning was how to provide quality education with the best synergy between day to day experience and classroom learning – at the least possible price and using technology in the most efficient way.'



[Jean-Pierre Paillet] is a man who understands the nature of computers to a point where each has nurtured the other almost symbiotically.

His idea is to provide every outback household around Australia (that has at least one school age child) with his multimedia PC. If these were then plugged into a network of radio modems, students of the school of the air would suddenly have their learning experiences pushed through into an amazing, new dimension.

Want to learn about the Amazonian rainforests? The teacher sends out the appropriate CD-ROM. Whilst the CD-ROM sends real time video to the LCD monitor, the teacher can ask questions. These can arrive through the modem as either text or voice. Answers are keyed in or spoken through the mike and sent back to the teacher. If something in particular catches a student's eye, say, a beautiful bird, just point and click. Up pops up a window with genus and habit information; sample bird calls can play through the speaker and there could even be a short film of it flying or making a nest – all whilst the video continues in the background.

This is by anyone's yardstick a very ambitious plan, and the flack from proponents of traditional classroom education is going to be heavy. The technical details

are complex, but it suffices to say that it all currently exists, in Queensland.

If the Queensland Department of Education was to get behind this with at least token support, then design of the computer could start right away.

Nothing needs to be built from scratch, except possibly the casing. Manufacture can occur here, and capital injection is minimal. The cost of CD-ROM publishing, as with every aspect of the computer industry, is constantly decreasing, and authoring systems, although at this stage extremely hard to use, are also improving.

Actually, an authoring system is probably the major part of the agenda for this project. Ultimately, any teacher should be able to produce a complete CD-ROM curricula from a relatively cheap '386.

The Amazonian example above could have been created by taking a standard documentary film and defining hot areas on the screen that link up with massive public libraries of non-specific data. The bird would just need a mouse-drawn box around it in a single, frozen frame of the video. The computer can then interpret the camera's movements and maintain that hot spot for all subsequent frames, at least until the bird had disappeared from view. Identify the type of bird and the computer will call it up from the library

For the sake of our children's education, we can just hope that visionaries like Jean-Pierre Paillet are listened to.

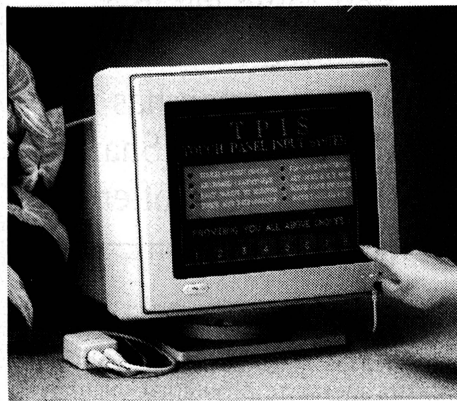
and splice it into what eventually becomes the CD-ROM.

All of this will one day happen. For the sake of our children's education, we can just hope that visionaries like Jean-Pierre Paillet are listened to.

The benefits to Queensland and Australia in taking on this world first, intelligent revolution premier project for the children, would be enormous.

If you'd like to know more, Jean-Pierre Paillet can be contacted through PO Box 1662, Southport Qld 4215. □

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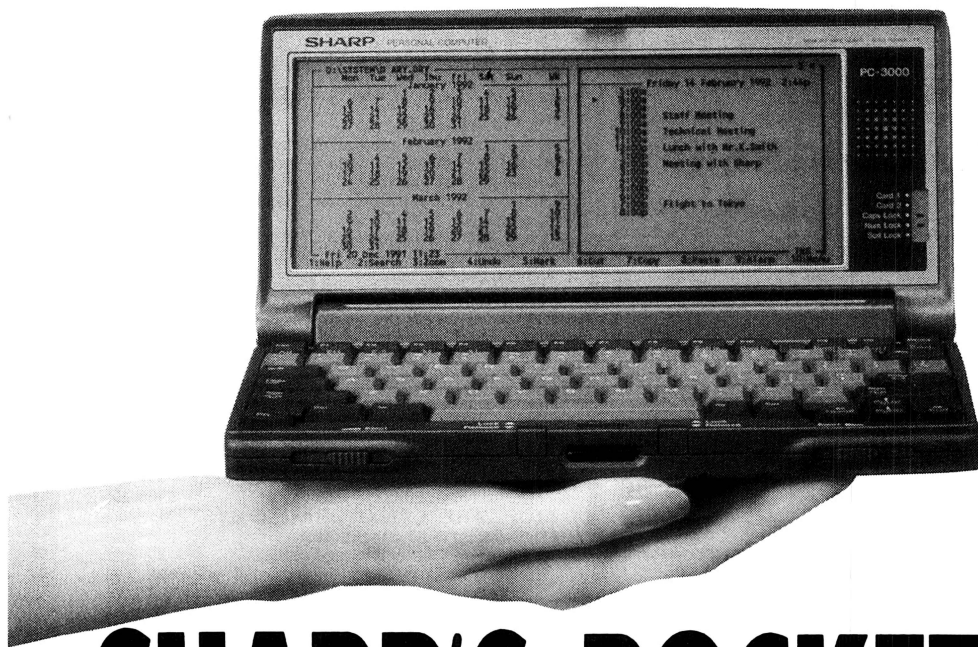
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SHARP'S POCKET POWERHOUSE

COMPUTERS ARE STILL getting smaller and smaller. In fact, with such monotonous regularity that most people are probably sick of hearing about it. But the fact remains that as miniaturisation allows computer makers to cram more and more power into a 'standard' sized box, it also allows the computer power that once occupied that box to fit in a smaller one.

Portable computers are commanding an even larger share of the market all the time, as buyers realise the added potential of being able to just switch the computer off and take it home with them. Or take it on business trips, or to use in the field.

But even notebook computers are a bigger item than most people want to carry around with them all the time. You could get an electronic diary, but they are far from being a complete computer, and most offer no means of transferring data between it and your office computer. Atari's portfolio is, to some extent, an MS-DOS compatible portable, but its small screen and limited memory space restrict its functionality, especially with today's memory-hungry, full-screen software.

Sharp's new PC-3000 series neatly fills the gap between personal organisers and fully-fledged notebook computers. The base model has a total of 1Mb of RAM, which is allocated as 640Kb of conventional DOS memory, and 384Kb of RAM

disk. The next model up has 2Mb of RAM, giving over a megabyte of 'disk' storage.

Because of the small size of the unit (about an inch longer than a VHS video-cassette), there is no internal floppy disk drive. Rather, there are two slots for RAM cards, which appear to DOS as the A: and B: drives. The cards each have an in-built battery, so they can be used as if they were floppy disks, and have a capacity of 512Kb each.

The Sharp has MS-DOS 3.3 in ROM, so you don't waste valuable RAM space with the operating system. There's also a brace of little applications in the ROM, such as an address book, calculator, spreadsheet, scheduler, and text editor. To protect all your data, there's an optional power-on password.

There's also a custom copy of the LapLink file-transfer program in there, which steadfastly refused to work with any version of LapLink I have on any of my regular machines. Fortunately, it has a self-install feature, which allows it to copy itself to another machine over its serial port. Alas, the self-install is far from reliable – out of four machines I tried, I could only get it to work with one of them. I think Sharp should ship a floppy disk with LapLink on it, otherwise a lot of people are going to find that they can't connect the machine to their other computer.

384Kb of RAM disk may not sound like much, but that's the same as my trusty

If you thought the notebook was as small as you could get in a full-featured PC, read on. Mark Cheeseman has just taken a brief look at Sharp's latest pocket-sized offering.

Toshiba T1000SE, which has WordStar 4 in its RAM disk (sans dictionary and thesaurus), with a few other bits and pieces. With the extra megabyte of internal memory, and another megabyte of removable storage, there's plenty of room for a few basic applications.

As you'd expect from a machine of this size, the keyboard is tiny. Touch typists will find it difficult to use, but with its standard QWERTY layout and real keys that move when you press them, you could probably get used to it in time.

The screen is also rather small, although it displays a full 80 x 25 characters of text, and CGA graphics. In an obvious attempt to extend battery life (which is a claimed 1 month on 3 AA alkaline cells), the screen is not backlit.

The processor is a CMOS 8088A, which runs at 5- or 10MHz, although after flattening the battery and putting in a new one, I noticed that the speed had dropped to 2MHz. The setup menu allowed me to change back to 5 or 10, but I never could get it back down to 2. An undocumented power-saving feature, or a bug?

With DOS 3.3 in ROM, most people would just let the machine boot from the ROM disk (which appears as drive C:), although you could boot a different DOS version from a RAM disk if desired. If you have a non-bootable RAM card in the A: drive when you reboot, you don't have to pop the card out first – the machine just boots from C: drive. It's a pity all machines don't do this.

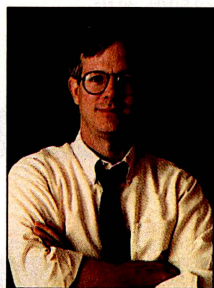
The machine reported a Landmark speed of 4.07 – about what you'd expect for a 10MHz XT. I had a lot of trouble finding a benchmark program that would run without crashing, but eventually I found a recent copy of the Landmark test which worked. I don't know if this indicates some general compatibility problem with the machine – I didn't have it long enough to try many applications.

Pricing starts at \$1495 for the PC-3000, with 1Mb of RAM. The 2Mb PC-3100 is \$1695, while the 512Kb 'floppy' RAM cards are a mere \$495 each. There's also an external 3.5-inch floppy drive available for \$595. From Sharp, (02) 831 9111. □

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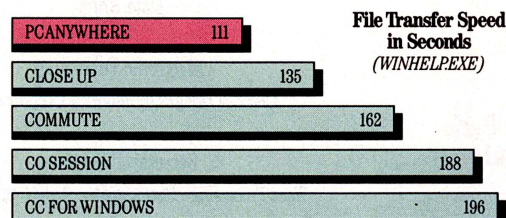
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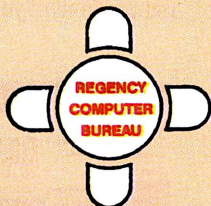
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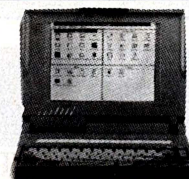
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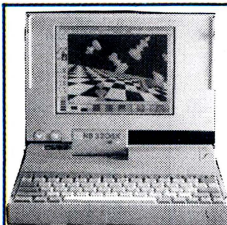
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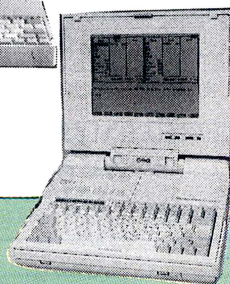
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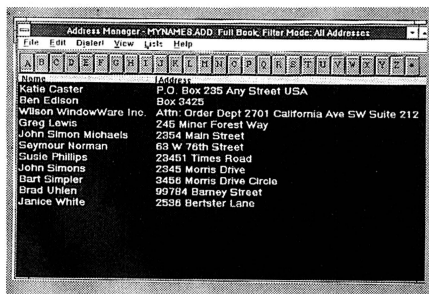


**JOHN
HEPWORTH**

Address Manager and NJFF

AS THE WINDOWS juggernaut gathers pace, more and more of the new Underground software, both public domain and shareware, is written for this GUI rather than for DOS. Many of these applications are relatively simple in concept, addressing specific user needs. This is to be expected. Until recently, the only way to write a Windows program was to use the Microsoft C compiler and the SDK, a daunting task in itself even for a 'Hello World' type of program. Many of the newer programs are now being created with compilers like Visual Basic or Turbo Pascal for Windows, but at the same time many of the better-crafted Underground programs still are created with the traditional C plus SDK combination.

A couple of carefully focused, and well-written, small programs for Windows are Address Manager from Wilson WindowWare Inc, and Nifty James File Finder from Mike Blaszcak. Both were written with Microsoft C and the SDK.



Address Manager – the default screen.

Address Manager

MORRIE WILSON of Wilson WindowWare has been slogging away for years creating a variety of Windows programs, including batch languages for Windows and several utility programs. Address Manager is a well crafted, straightforward program that simply takes care of managing an address book and creating labels as required from the information in that book.

Installation of Address Manager is done automatically by an installation program that creates a directory for the Address

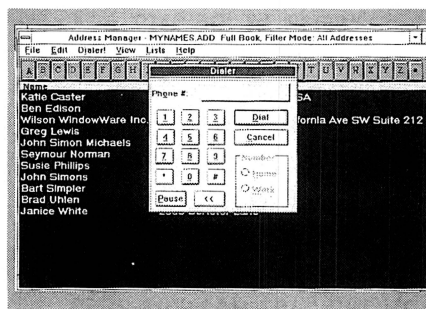
Manager files, and creates a group in program manager with three icons. One is for the Address Manager program itself, the second is used to run NotePad and display the ReadMe file, while the third is a program which imports data from other programs.

No manual on disk is provided, but there is very good on-line help via the normal Windows type of help system.

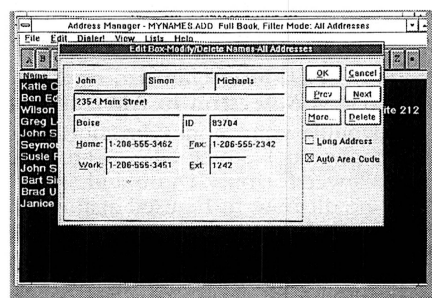
The Address Manager screen

THE ADDRESS MANAGER window defaults to using most of the screen. At the top of the window is the usual title bar, in this case showing the name of the program, the name of the data file in use at the moment, and the description of that data file. Naturally, below that is the usual ribbon menu found with any Windows programs, from which pull-down menus access various functions.

The next line of the screen is rather interesting. It has 27 buttons spread from one side of the window to the other. Twenty-six of these are the letters of the alphabet, while the third is the asterisk key. Beneath this control bar is the main window which shows the name and either the home phone number or the address of the person concerned. The asterisk key is used to toggle between page mode and filter mode. In filter mode the only entries displayed are those where the surnames all start with the letter concerned. Page mode displays all entries, starting from the first one where the surname matches the letter.



The Address Manager dialler has a telephone-like keypad.



In Edit mode, Address Manager has a dialog box with many fields.

Selecting an entry with the mouse or keyboard, and using the menus or double clicking on the entry, activates the modify/edit mode and displays quite extensive information on the person. This includes the first, middle and last names, address, city, state (unfortunately the state field does not cater for states with abbreviations more than two letters long), ZIP or postcode, home phone, work phone and fax numbers.

A subsidiary dialog box has some more fields. These are birthdays, anniversaries and a remarks area. Unfortunately, there is no provision for a company name which makes Address Manager relatively unsuitable for use in the business environment, even though it is still very useful for private use.

Address Manager can create address labels using either dot-matrix or laser printers. It has a good dialling function. This brings up a dialog box which shows at the top the home or work phone number of the highlighted entry, and toggles between them with a pair of radio buttons. The number can be manually edited with the normal numeric keys, but the dialog box also has buttons laid out like a push-button telephone so that the phone number can be entered or edited with the mouse.

Another nice feature of Address Manager is its ability to create up to 32 user-defined lists within a single database. As the maximum size of a database is limited by available disk space, it is possible to have details of all your friends, family and

contacts in the one database, and have lists to simply separate out friends, family, club members, company employees or any other identifiable group. Naturally, Address Manager is not limited to using only the one database, though it does not link databases together.

As indicated before, Address Manager is a product of Wilson WindowWare Inc, of Seattle. Registration is US\$39.95. I like Address Manager. It has some room for improvement, in particular it needs to add fields for company names and departments, and needs to extend the state field to allow for Australian 3-letter state abbreviations. At the same time it is easy to edit, to print labels and reports, and use as a telephone dialler.

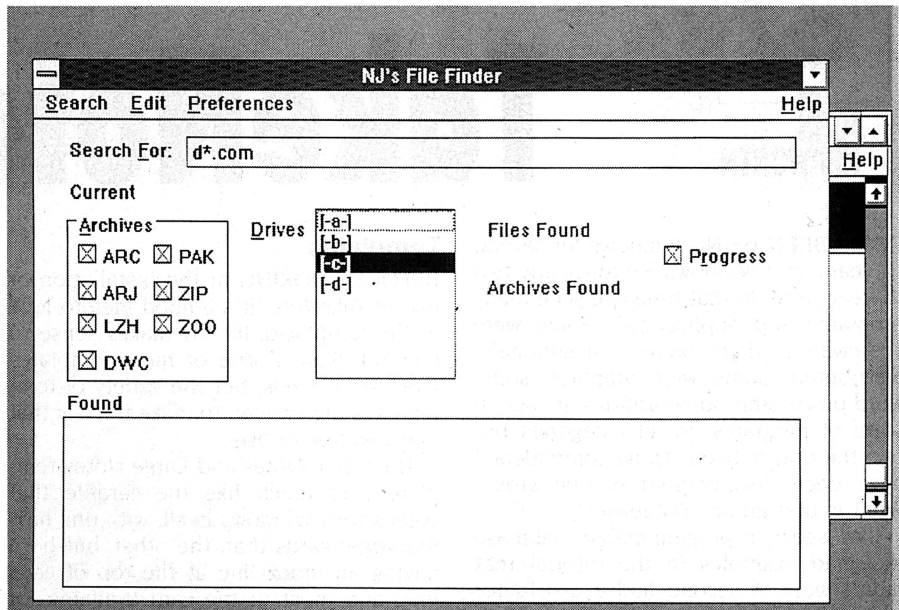
Nifty James File Finder

THE UNUSUALLY named Nifty James File Finder is, at the same time, a simple and unusually useful program. Its purpose is to look through selected disk drives for files which match the mask entered by the user. There have been various programs like this in the past, but most were for DOS, and most did not have the ability to look within the archive files commonly used to distribute public domain software and shareware.

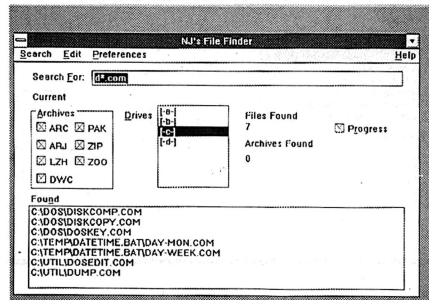
NIFF (for short) works within Windows, and searches for files whether or not they are in an archive. Archive formats supported are .lhz, .arc, .arj, .zip, .zoo, .pak and .dwc, which covers all the formats seen on most local bulletin boards.

The best way of discussing NIFF's capabilities is to describe a typical session. Launch the program and a window appears. Enter into a text box the file name and extension for which you are searching, using wildcard characters if looking for a group of files. Beneath it are seven check boxes, one for each of the available archive file formats.

To look into archive files with particular extensions, select the associated check boxes. The default is for all check boxes to be selected. The final choice is to decide which drive(s) are to be searched. NIFF shows in a list box the letters for all available hard and floppy drives on the system. After selecting one or more drives, pressing <enter> or using the appropriate menu command starts the search. NIFF can be minimised to an icon, or put in the background behind other applications, while the search continues. To pause the search at any time, press <esc> while the NIFF window is active, or use the menu with the same effect.



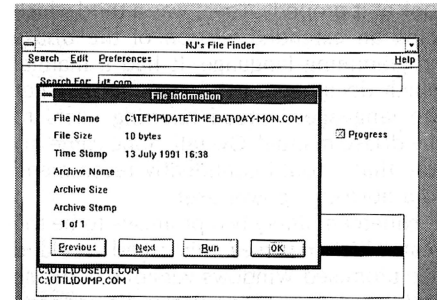
The Nifty James File Finder has a simple screen.



The Nifty James File Finder lists the files it finds, with details of the drive and directory.

The results of the search are displayed in a text box at the bottom of the NIFF window, with details of the drive, directory and file name found, and the name of the archive file if the file is in an archive. The text box has only eight lines, but if more than eight files are found that match the search criteria, a scroll bar appears at the right side of the box to allow the user to move forward or back through the list.

Having found a list of files, a number of actions are possible. They can be tagged. Tag one or more of the files in the list. A list of tagged files can be copied to the clipboard, and pasted into another application. Information on any file in the list is easy to get, and is shown in a dialog box.



Nifty James File Finder can give information about any file it finds and run programs it finds.

The information is file name, file size, creation date and time, plus the archive name, size, date and time. Very nicely, if you have found a program file, for a DOS program or a Windows program, there is a button to run that program.

For a file search program running under Windows, NIFF is quite fast, though it does take several seconds to look through an 80Mb hard disk. As it can run in the background, this is never a problem as it's always possible to continue with another task while waiting for it to finish. Its ability to cut and paste the file list, to display information on files and to run programs is a real bonus.

Registration of NIFF is US\$15. □



**JOHN
HEPWORTH**

TakeNote

I'VE BEEN USING Windows for several years, and Windows 3.0 for nearly two years now. In that time I've seen many programs and applications. Some were shareware, others were conventionally distributed. Some were graphics, some word processing, some utilities, in fact all sorts of programs. In all categories but one there have been strong contenders. I have been disappointed in one group. What is that group? Databases!

I've seen a programmable database that had examples in the tutorial that didn't work. A second had a distributor which was so small that there seemed to be only one review copy to be shared amongst all potential reviewers. They asked for it back before there was time to look at it properly. There was a third which used an extended version of the dBase programming language. It had a manual which documented the compiler but not the language, instead referring users to the dBase manual. Overall, none came my way that I could confidently recommend to a novice or power user.

Nineteen ninety two promises to be the year which reverses this trend. Borland has promised Windows versions of dBase and Paradox. Knowing Borland's performance over the years with a variety of applications and languages, these should be great. I've also just got a review copy of WindowBase. It looks good at first glance, and I'll review it as soon as possible.

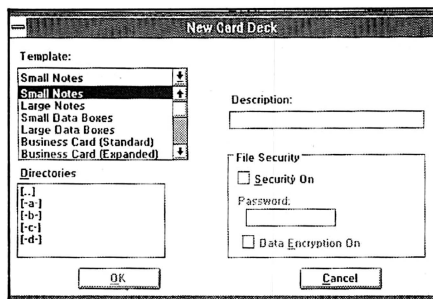
But we all, from novices to the mythical power users, need a simple database system that lets us create simple records of all sorts of information in our lives. Welcome TakeNote, the new product from ButtonWare, better known for the PC File database. It has some distinct limitations, but within those limits it is powerful, convenient and adequately flexible.

The main limitation in TakeNote is that, when creating a database, the user can't determine the number, length or names of fields. Instead TakeNote provides a number of templates for common purposes. To create a database, the user selects a template and then gives a filename for the new database. Any number of databases can be based on the same template, or different templates can be used.

Templates

BEFORE LOOKING at the installation or use of TakeNote, it's a good idea to look at the templates. It only makes sense to buy TakeNote if one or more templates meet your needs, but the variety of templates is big enough to make it likely that many will be of use.

The Small Notes and Large Notes templates are much like the cardfile that comes with Windows itself, with one having larger cards than the other, but both having an index line at the top of each line, and most of the card available for



The Small Note and Large Note templates are similar to Windows' own Cardfile, while the others can create databases with notes in a variety of forms, with named and unnamed fields, with and without scrolling and word wrap. . . and so on through about 20 different choices.

text. As information is entered into the card, it automatically word wraps and can be scrolled to see all the contents if it won't fit on the display area. The index line is automatically created from the first few words of text. Large Data Boxes and Small Data Boxes templates create cards that have an index line at the top, and a remarks area at the bottom with word-wrap and scrolling. Small Data Boxes also has four fixed length, but un-named, fields, while Large Data Boxes has five fixed length fields in addition to the index line and remarks area.

The other templates are all used to create databases that have named fields,

an index line at the top of each card, and a remarks area in which data can scroll and word-wrap. Business Card (Standard), Business Card (Expanded) and Business Card (International) are used to record details of those people whom you contact in business, professionally, or socially, with more fields being added as you progress from Standard, to Expanded, to International. Rolodex Card (Expanded), Rolodex Card (Standard), Rolodex Card (International) are somewhat similar, but are designed to print out cards to be inserted in Rolodex index devices. Personnel (Standard) and Personnel (Expanded) can store simple information about your employees or co-workers, but would not really be powerful enough to use in a moderate to large company, or as a membership database in even a small club or user group. The Credit Cards, Home Inventory, Music Inventory, Recipes, Software Library and Video Inventory create databases for rather obvious purposes, and are very useful.

Before looking at the installation and use of TakeNote, it's time to think about indexing. Depending on the template, it's possible to index on up to three fields, in each case in ascending or descending order. The index line on most cards displays the contents of the index fields for the particular card with the primary field at the left, the secondary field in the middle, and the tertiary field at the right of the index line.

Installation and use

TAKENOTE REQUIRES Windows 3.0 or later, a hard disk, and supports all the common video standards. Two megabytes of memory is recommended.

An automatic installation program run from within Windows takes care of creating a directory on the hard disk for TakeNote and copying files from the distribution disk into that directory. It then creates a program group and inserts two icons into it. One is for the TakeNote program itself, the other is for the ReadMe file that details improvements and changes made since the manual was printed.



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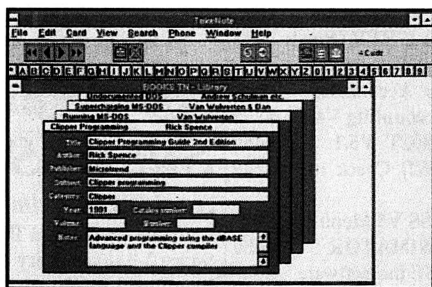
To run TakeNote, simply click on the icon in the usual way. A screen appears with the usual title bar across the top, and menu bar beneath it. The third line has 11 buttons, all but one of which is blank until a database is created or loaded. The fourth line has 36 buttons, one for each letter of the alphabet and one for each of the 10 numerals. This is used to jump rapidly around the database and find the first card with an index line starting with the letter or number concerned.

The entries on the menu bar are File, Edit, Card, View, Search, Phone, Window and Help. From the File menu it's possible to create a new file, open an existing file (several files can be open at the same time), merge, save or close files. Other entries are used to print labels, Rolodex cards or reports, for all or selected cards. Other entries on the File menu allow addition or removal of security from a database, changing the index, and changing the database description.

The Edit menu has the usual undo, cut, copy, paste and clear actions. The Card menu is used to add, delete, copy or undelete a card. Card view, showing records as a stack of file cards, or table view, showing the database in a table of rows and columns, are chosen from the Card menu. The Search menu has functions to find cards using various search techniques. The Phone menu uses a modem to dial a phone number in the card currently being displayed. The Window menu is used to tile or cascade open databases, to select a particular one for display, to close all loaded databases, or to arrange the icons for minimised but open databases.

Creating a database

LET'S CREATE A new Business Card (International) database to show just how easy it is. Choose File New from the menu.



To create a database in TakeNote, the user selects a template and then gives a filename to the new database. Any number of databases can be based on that same template, or different templates can be used as required.

A dialog box appears. A drop down list box displays the names of the available templates, so click on Business Card (Int'l). Then tab or use the mouse to move to the Filename box, and enter the filename for the new database. Remember that it's possible to create more than one database from the same template. A description for the database can be added, the drive and directory for it can be chosen, and security with a password and optional encryption can be selected. Vital for such things is employee records and a credit card database that can, if desired, include PIN numbers.

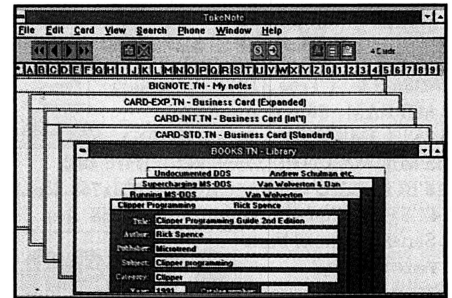
Having accepted all the above, a blank card appears for the new database. At the same time, symbols suddenly appear on the blank buttons on the third line of the screen. A group of four buttons at the left

It only makes sense to buy TakeNote if one or more templates meet your needs, but the variety of templates is big enough to make it likely that many will be of use.

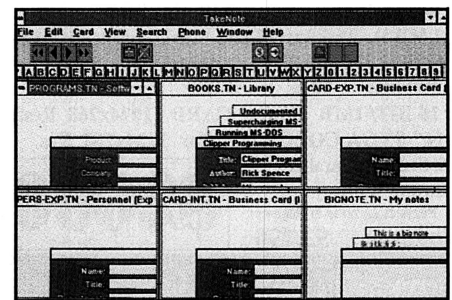
are used to go one card forward or back through the stack of cards that form the database, and can also fast forward or rewind several cards at a time. The next two buttons are used to create a blank card, or to delete the current card. The next two buttons are used to search for a card that matches user-entered search criteria.

The final group of three buttons includes the one already mentioned that uses your modem to dial outgoing calls. The other two are used to print labels or Rolodex cards.

More than one database can be loaded at a time. They can be minimised as icons, maximised to take as much of the screen as possible, or normal. Databases which are not minimised nor maximised can be tiled or cascaded. Very interesting, it's possible to quit TakeNote with databases open. The next time TakeNote is started



The TakeNote interface is as simple to use as Windows – and much easier than having to type in commands with a complicated syntax.



The Window menu offers a choice to tile or cascade open databases, to select one for display, to close all of them or to minimise open databases to icons.

the same databases are reloaded, but are shown as icons with the filename and description for each.

I haven't mentioned one important aspect, that of file import, export and merge. Two databases created with the same template can be merged with the File Merge command. Files are normally saved in TakeNote's own format, but can also be saved in dBase file format, WordPerfect mail merge format, or comma delimited format for use in many other word processors. Import is also possible with some limitations, mainly that the number and length of fields being imported must match those already in the TakeNote database.

TakeNote is a very interesting product. With its good range of templates, useful for a great range of home and small business databases, it's possible to get a Windows database up and running in a matter of moments. Just what you would expect from the company that publishes PC File.

TakeNote, \$135, is distributed in Australia by Manacomm, (07) 368 2366, fax (07) 369 7589. □

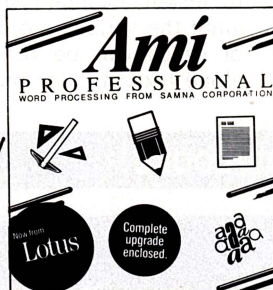
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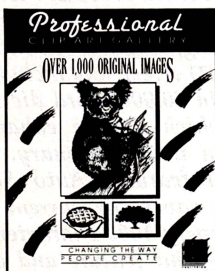
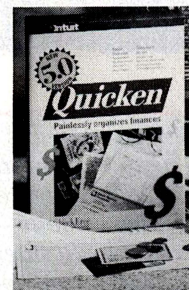


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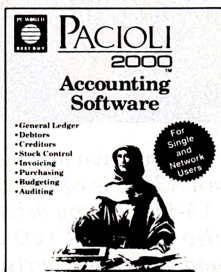


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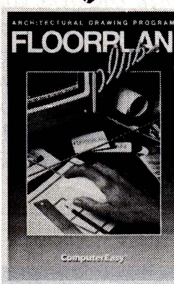
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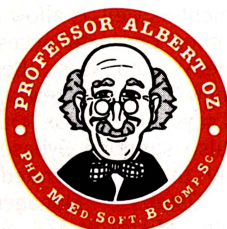
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new laser is supplied with AppleTalk, serial, parallel and SCSI hard drive ports. The LZRI560 has an Adobe PostScript Level 3, RISC-based controller and 4Mb RAM (expandable to 16Mb).

Dataproducts LZRI560 \$8900. Dataproducts (02) 451 3533.

payable, payroll and inventory – and also offers job costing, sales order, purchase order, fixed asset and bank reconciliation. The Novell version includes the Resource Manager to install, maintain and integrate the various modules, all of which can be run stand-alone (except sales order and

Personal word processor



Sharp has released the PA-W1410, a portable DOS-compatible word processor with a 3.5-inch floppy drive. Weighing 7.5kg, it has a backlit 16-line LCD screen and includes a built-in 80,000 word dictionary which can be enhanced with a user dictionary. The W1410 features Auto Save, which saves the current file after every 1000 characters, a merge-print feature and easy forms fill-in.

PA-W1410 \$999. Sharp (02) 831 9111.

We are always seeking new and interesting products to tell our readers about – we are particularly interested in releases that would be useful to small businesses, professional offices and 'stand-alone' users. Please address release information to: Product Updates, Your Computer, PO Box 199, Alexandria 2015 NSW. For inclusion in a specific month, material must be submitted 4 weeks prior to the cover date. We are also interested in the stories behind new Australian product development – if there is a tale to your product that you would like to tell our readers, please fax it to Jake Kennedy on (02) 693 9720.

Foxy notebooks!



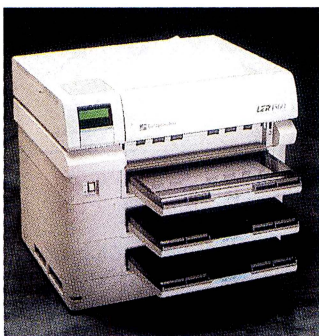
Melbourne-based Veridata has released two new Renard notebooks. The 20MHz '386SL Renard N300L is equipped with 4Mb RAM, an external high-density 3.5-inch floppy drive and either a 60- or 120Mb hard drive. It also has a VGA LCD display and serial, parallel, external video and bus mouse ports. The N300L is supplied with DR-DOS, an AC recharger and carry bag. The similarly configured 25MHz '386SX-equipped Renard N305S has 2Mb RAM, external floppy drive and a choice of a 40-, 80- and 120Mb hard disk. Both units are sold with a 3-month on-site, plus 21-month return to base warranty.

Renard N300L: 60Mb, \$4140; 120Mb, \$4940; N305S: 40Mb, \$3600; 80Mb, \$4000; 120Mb, \$4670. (Prices excluding tax.) Veridata (008) 032 352.

Paradox access to SQL databases

Borland and Tandem Computers have announced the Tandem SQL Server Gateway, a product to allow Paradox 3.5 and Paradox Structured Query Language (SQL) Link 1.1 users transparent access to Tandem's Nonstop SQL databases. The Tandem SQL Server Gateway is compatible with the SQL Server Protocol supported by Microsoft and Sybase. That means software tools, like Microsoft Excel and Paradox, can be made available to Tandem customers in the Tandem environment as well as allow users of other products access to Tandem databases. Besides the new Tandem Gateway, Borland says the Paradox SQL Link 1.1 also supports Sybase SQL Server, the OS/2 Extended Edition Database Management System, Microsoft SQL Server

A3 laser



Dataproducts has announced the LZRI560, a 15ppm, A3 laser printer with a choice of either 300 x 300dpi or 400 x 400. The

Network accounting

The Open Systems range of accounting software for Novell networks is now available in Australia through Sydney-based TeleSystems. The system comprises five basic business modules – general ledger, accounts receivable, accounts

purchase order). Included with the system is Report Writer for developing custom reports and transferring data to other applications such as spreadsheets, word processors and databases.

Open Systems Accounting Software single-user: \$950 per application; network: \$1350 per application. TeleSystems Commercial Division (02) 819 6322, fax (02) 819 7375.

Faxit

FAXit - Select FAX Destination(s)

File Options

Name: Phone:

Co.: FAX:

Date: Time:

Phonebook: FAXNUMS.FXD

Dr John King, Economics, La Trobe	<input type="button" value="Add"/> <input type="button" value="Delete"/> <input type="button" value="Replace"/> <input type="button" value="Group >>"/>
Editor, Letters to the Editor, Finance	
Geoff Fishburn, Department of Econ	
Grysel Wilkins, Ipxex Computers	
Jake Kennedy, Your Computer	

OCCASIONALLY A software package arrives which legitimises a whole technology. Back in the late '70s, the first spreadsheet, VisiCalc, did it for personal computers: suddenly owners of PCs could do something with their 'toys' that 'serious' users could not do with their minis and mainframes. Faxit does the same thing for fax cards. I have been using a Xerox Datacopy fax card for some years now. While this worked very well, all I could send were either image files or 'typewritten' text files: it allowed me whatever font I liked, so long as it was 12 point Courier, and whatever text alignment I liked, so long as it was flush left. Now with Faxit, I can effectively desktop publish my faxes, incorporating sophisticated fonts and images in the one document. Faxit is a Windows application you install as a printer driver. When you select Faxit as your printer, it sits between whatever Windows program you are using and your fax card.

FAXit by Alien

Orientation:
☒ Portrait
☐ Landscape

Resolution:
☒ Fine (200dpi)
☐ Normal (200x100dpi)

Paper Format:
☐ US Letter
☒ DIN A4
☐ US Mini
☐ DIN B5

☒ Generate Cover Sheets ☒ Beep on FAX receipt

When you print, you print to Faxit. There is considerable additional sophistication that Faxit provides over a standard fax machine. For a start, images sent direct from the computer don't suffer the degradation of image that applies to a scanned page. Your list of stored numbers is a typical computer database, rather than a fixed set of numeric buttons allocated to a maximum number of recipients. Creating and maintaining a fax group is also much easier, and if you wish you can send a different cover sheet to each recipient. Fax images can be stored and recalled. Also, if you have optical character recognition software, incoming fine resolution faxes can be converted to text. The advantages of Faxit over a fax, and the falling cost of PCs, makes a permanently-on computer with Faxit a worthwhile alternative to a fax machine. The small business can use Faxit to add a professional desktop publishing look to faxes. There are still some aspects of computer faxing that Faxit exploits poorly. Its database is fairly 'dumb': you can't import data into it from other files, and group faxes are a poor alternative to selecting recipients for a fax on the basis of logical criteria. Faxit would benefit from dropping its internal database entirely, and letting you send faxes to people listed in a Windows application. That aside, Faxit brings a whole new dimension to faxes.

Faxit \$260. Software Suppliers (02) 888 1955.

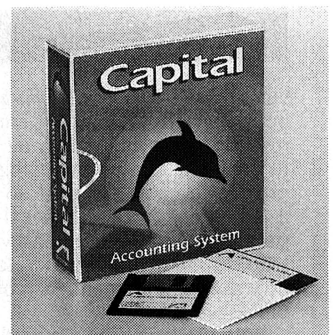
— Steve Keen

and Oracle Server. Paradox also provides connection to Digital Equipment's Rdb/VMS as a separate SQL Link product.

Prices not available at press time. For more information contact Borland (02) 953 9500.

Capital accounting

Capital is an easy to use, full featured accounting package with enough power and flexibility to satisfy most business accounting requirements. The package includes an Accounting Primer for those that are new to PC-based accounting. All accounting rules are hidden behind the menu-driven user interface which facilitates quick and easy entry of transactions. All modules instantly update the general ledger, providing



up to the minute financial reports. The system provides invoicing, debtors, creditors, stock, job/time control and

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The printed word

VOLTAIRE, IN his *Philosophical Dictionary*, remarked, 'It is with books as with men: a very small number play a great part, the rest are lost in the multitude.' It is to this which I have turned in the vain hope of redressing the imbalance. Computer books provide the how to that is so often missing from the manuals. It is no good knowing what this command does and what that option does without being aware of how they operate together. Like the clutch and accelerator on a car, until it is understood how they complement each other, driving remains an impossibility.

With the lead time required in printing, packaging and distribution, software manuals also slip out of date by the time they are released. As the inevitable bugs – 'hidden features' – surface in the software, addendum 'pon addendum must be published to make the unwary aware. In each column I shall try to gather tomes of similar ilk (though not necessarily of identical subject material). This month deals with absolute first-time-user productions and ranges across some broad horizons.

DOS 5 Made Easy

Author: Herbert Schildt
Publisher/Distributor: Osborne/McGraw-Hill
ISBN: 0-07-881690-4
Pages: 390
Price: \$39.95



This book follows solid ground-rules laid down by numerous predecessors (30 of them by the same author) and assumes a complete lack of previous computer knowledge and experience. In this respect it is ideal for the beginner and will guide them from the first faltering steps ('How do you turn this thing on anyway?') through to fully-fledged command line contortions. Billed on its blurb as 'simply the best book available for learning how to use the latest version of DOS', it also devotes quite a few leaves to some of the more necessary aspects of hardware.

Schildt is obviously an expert on the production of training manuals. His style is clear and unambiguous, providing insightful comments and helpful suggestions that go a long way towards exemplifying the highly successful 'made easy' format. The reader is never smothered with details, a failing that dogs many software manuals, and is rather lead gently by the hand

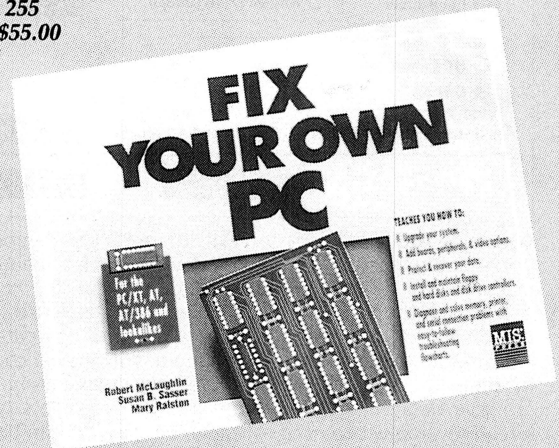
from one area of interest to another. Cursory introductions are made to the DOS interface before diving into the File Manager. Here a look at the mechanics behind various drive types provides a good grounding in the theory behind the practice. Unlike some books that cover every microscopic detail of a single feature before moving onto the next – hoping the reader will see the wood despite the trees – Schildt easily jumps from one to another, delving a little deeper at each stop, but never losing sight of the overall picture.

DOS 5 Made Easy treats the shell interface as an integral part of the new look DOS. Nearly half the book is devoted to this, with the rest covering the command line, batch files, configuring DOS, recovering from the idiotic mistakes we all make, and managing disks. The last fifty or so pages provide a quick command reference that has the same concise, but easy, reading style that flows through the entire book. Finally, on a card at the very back, is a complete command synopsis – basically a series of one line explanations.

If you're a new-comer to MS-DOS machines, or have just taken the plunge and upgraded from version 4 to 5, this book is for you. My only gripe is the use of what are obviously laser printed proofs for the final printing, rather than the preferable sharp, clean image setting. Herbert Schildt has proven himself numerous times as a best-selling author; and even if he was a new-comer, this book is of such a standard that it easily stands on its own feet. Surely the extra few thousand would have been worth it?

Fix Your Own PC

Authors: Robert McLaughlin, Susan B. Sasser, Mary Ralston
Publisher/Distributor: MIS:Press/WoodsLane
ISBN: 1-55828-066-9
Pages: 255
Price: \$55.00



OK, you've just gone to pick up your computer from the repair shop where your hard drive, after appearing to go down in flames, is being repaired. 'That'll be one hundred and fifty dollars,' says the technician.

'What was wrong with it?' you innocently inquire.

general ledger modules. An integrated point of sale and payroll module will be available shortly. Ninety days technical support is included with each package. Extended support is

also available beyond this period. Capital's features include menu-level passwords, multi-company support, on-line context sensitive help, pop-up pick lists for all account codes, re-

port redirection to any one of four printers or to the screen, unlimited number of accounts and transactions, general ledger budgets and history for each period, financial report

writer, open item or balance forward debtor accounts, review of all items purchased by a debtor over the past 12 months, support for sales people with commissions calcu-

'Don't know,' he replies.
'Did you solve the problem?'
'No, but it wasn't easy not solving the problem.'
'What? Why should I pay for you not solving the problem?'
'Diagnostic fees.'
'But you didn't diagnose anything, let alone fix it.'
'Look, my time's your money, and I spent nearly two hours worth of it on this.'
'What about the warranty? I bought it less than twelve months ago from this very shop.'
'Yeah, I spoke with the previous owner. He said he sold it to you so cheaply that no warranty was included.'

The rest of the conversation is pretty much unprintable, but the end result was that I handed over the money because he, as he smugly informed me, had my computer and me by our proverbials. The problem, after much hair tearing late at night, turned out to be corrupted boot sectors caused by a virus from a local university. The hard drive was subsequently fixed with a low-level format.

I wish, looking back, that I then owned a copy of *Fix Your Own PC*.

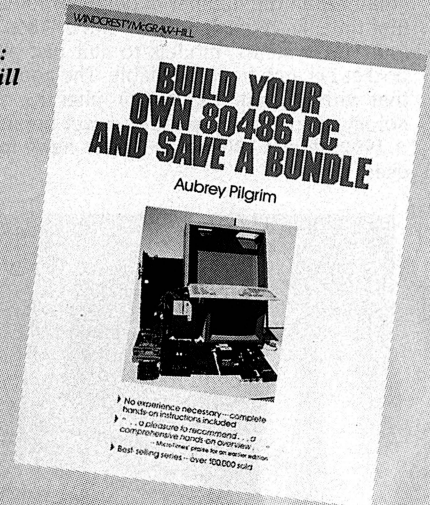
Written by a trio with extensive combined experience in the computer industry, this troubleshooter's bible is probably the first base anyone should stop at before carting their sick computers off to the doctor. It assumes no prior experience and even begins with a section on how to tell what model computer you have. It is here, as it is throughout the rest of the book, that its age shows. There is no mention made of '486 systems, and all mechanical assembly details apply strictly to desktop models. Many of the photographs are difficult to decipher, out of focus, filled in, or way out of date — when is the last time you saw a full length hard drive controller card?

These shortcomings, however, are more than made up for by the excellent flow chart style diagnostic section. Starting from the most basic question of all, 'Does the computer have video? Yes/No,' this section will successfully lead the novice from, 'Make sure it is plugged in' to the, if necessary, 'Intermittent Weird Failure' section. At no stage do the authors assume the reader has any technical skills. If the machine looks like it needs a technician's expertise, then they strongly advise on sending it in, however, if the matter can be fixed by simply replacing a board — even the motherboard! — then they provide detailed instructions on how to do it.

Fix Your Own PC is also peppered with hints and safety warnings, although there doesn't seem to be much logic to their placement. Sections on the use of various diagnostic programs are a welcome addition, but you could probably buy a whole new system for the price of the software; if you need to know where, an extensive listing in the back provides all the necessary American contacts. Overall, *Fix Your Own PC* could save you a lot of money and hair loss, however, it does need to be updated and have a little more effort put into the diagrams (rough bit-mapped affairs at best). I strongly recommend it for those who want to tinker, but feel they need some guidance before getting up to their necks in circuit boards and disk drives. For the rest of us, it just might help to dispel some of the mysterious aura surrounding those prophets of profits in the backroom, the technicians.

Build Your Own 80486 PC and Save a Bundle

Author: Aubrey Pilgrim
Publisher/Distributor: Windcrest/McGraw-Hill
ISBN: 0-8306-8628-2
Pages: 220
Price: \$29.95



It seems curious that, when so many cheap but well made clones are available, a book should be written on how to assemble your own. Current costs for assembling a '486 at wholesale are rated at \$50 per machine. This includes the burning-in, formatting of the hard drive and making sure everything works just so. Anyone can buy one of these through a mail-order house. Perhaps far more important than the small saving is the invaluable learning experience one gains through doing it yourself. This book will show you from scratch how to go about ordering the right parts to create a system perfect for your specific needs.

Aubrey Pilgrim appears quite a character. His countenance stares from the back cover, waxed and curled moustache glistening, looking akin to a second-hand car salesman. Author of the entire 'Build your own 80x86' series, his books have sold more than 100,000 copies. Their success is probably due to their completeness. This fellow knows his stuff and has drawn on years of experience and immense research to make the reader street-wise. Throughout the book there are comprehensive discussions on the whys and wherefores of different drives, monitors, keyboards, peripherals, memory chips — everything you could imagine. To top it all off are copious lists of magazines, software, consumables suppliers, prices (all American, unfortunately) and an excellent glossary.

If you're slightly daring, given to hair-raising pursuits and attacks of whimsy, then you might as well throw caution to the wind, grab a copy of this book and build your own 80486 computer. Just think of the Joneses scrambling to catch up, and besides, it's a lot of fun.

In the meantime, I'm just off down the road to see that car dealer. I'm sure I saw a copy of *Build Your Own Porsche and Save a Fortune* on his shelves. Hang on, did he have a waxed moustache?

— Steve O'Brien

lated automatically, mailing labels, fifteen-character stock codes, stock assemblies, stock reorder report, six stock selling prices and/or quantity breaks, debtor credit limit warning.

Capital single-user \$995; multi-user \$1495 (free, fully-functional demonstration copy available). Digital Solutions, (07) 883 1851, fax (07) 283 1217.

CD-Share

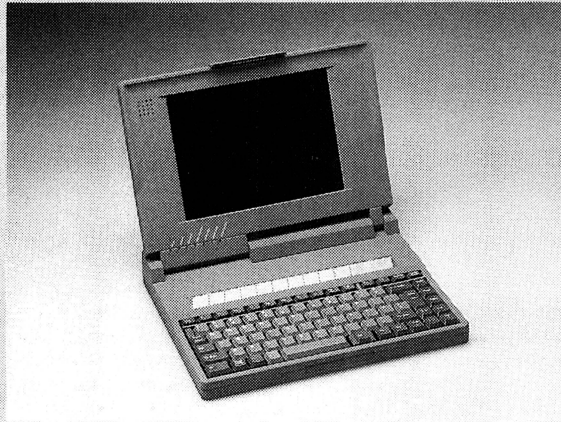
Digital Solutions has announced the release of CD-Share for sharing CD-ROMs on

any NetBIOS compatible network. Many CD-ROM applications will not run across a network, despite claims made by network vendors, since they communicate directly with the

The Notebook SX

1991 WAS CERTAINLY the year of the portable – sales were unprecedented and the number of new models released was greater than the number of desktops released that year for the first time. From basic XTs to 50MHz '486s, from CGA to 256-colour VGA systems, models to suit just about every need and pocket became freely available. The good news, of course, was that with all that competition plus the maturing of the technology, prices plummeted as never before.

1992 should offer even better news for potential portable users.



One of the first portables to land on my desk this year was the very logically named Notebook SX from Leo Computers, the first of a new range that company is bringing in. What first struck my eye when I unpacked the system, was the attractive, matt gunmetal finish on the case. It's not only different, but practical: that case is made of a space-age, impact-resistant plastic that should take a lot of abuse while not showing finger marks after being 'ported' around for several weeks in the field.

The Notebook has a '386SX processor, a 94ms 40Mb hard disk, a single floppy and 1Mb 640Kb of RAM, upgradable to 2- or 5Mb. A carry case and charger are also supplied, as is DOS 5. Options include spare battery packs, an external 5.25-inch hard drive, an internal modem (an external Pocket Modem is also available) and a Pocket Ethernet LAN adapter.

While not the smallest of notebooks, the Notebook fits comfortably into a standard briefcase: it measures 44 x 255 x 310mm and weighs just over 2.9kg with battery.

The keyboard is well-engineered in that the 69 keys are conveniently spaced and have excellent feel with good tactile and audio feedback. As you might guess from the number of keys, many of them serve dual functions (via the Fn key). In addition to access to the numeric keypad, the Fn key lets the user control the screen contrast and backlight, invert the video (from black on white to white on black, and back again) and turn the power on and off. It also provides an immediate way to switch between the built-in display and an external monitor – a procedure that, with most notebooks, requires you to exit an application and use software or the keyboard to change over.

The keyboard's layout is a little unusual along the bottom row: from left to right the keys are Alt, Caps Lock, Fn, tilde, a short space bar, Alt, Ins, then the left, down and right arrow keys. It took me a few hours to get used to it – the problem was mainly the short space bar. Being left handed, I tend to prefer tapping it with my left thumb (hitting it just under the C on a normal keyboard), but on the Notebook's keyboard, that's where the tilde is – until I learned to keep my fingers together, I had tildes between every word and sentence.

The backlit LCD VGA screen has 32 shades of grey and can be changed between 80 and 40 columns. While the keyboard adjustments of the backlight and contrast don't offer the 'infinite' adjustment that the usual knobs do, that wasn't a problem. In fact, with the contrast up high, I noticed that the display was sharper than you would usually see – many displays tend to be 'burnt out' (the edges of the characters become blurred) when the contrast is set too high, but the Notebook's just got blacker and the edges remained sharp.

About the time you read this, Leo will have filled the range out with a set of '486s which will include 20MHz SXs and 25- and 33MHz DXs. These new machines will have removable hard drives – one of the best ideas I've seen in either portables or desktops and a docking station as an option. With a docking station it's possible to replace a portable and a desktop with just the portable and its docking station – a real money saver.

Notebook SX with 40Mb hard drive and 1Mb RAM \$2850; internal fax/modem \$250; Pocket Ethernet LAN adapter \$590; 4Mb RAM upgrade \$450. Leo Computers (02) 891 3599, fax (02) 891 2058.

– Jake Kennedy

low-level drivers instead of performing DOS file I/O. CD-Share intercepts these calls and redirects them to the appropriate server. The software emulates the CD-ROM driver, so extensions such as MSCDEX will now run on a workstation. The package includes the Redirector, Server and Caching Software, which utilises up to 32Mb of expanded memory, 16Mb of extended memory or all conventional memory to cache up to 32 drives per server. This also has an optional dedicated mode to further boost performance.

CD-Share \$495 per network of unlimited users; free, fully functional demonstration version of CD-Share is available free upon request. Digital Solutions (07) 883 1851, fax (07) 283 1217.

Central Station

Digital Solutions has introduced a new multi-port hardware device for local area network communications called Central Station. It will allow a laptop and two printers to be connected anywhere on a LAN-tastic or Novell ethernet net-

work running thin coax or twisted-pair ethernet cabling. Artisoft's Central Station interfaces a laptop or PC to the network via the computer's parallel port, giving the computer access to Central Station's local parallel and serial ports and simultaneous access to any available network resource. Print Server StationWare enables network users to access printers attached to Central Station, making it a stand-alone printer server. Another StationWare package provides remote dial-up modem access to the network.

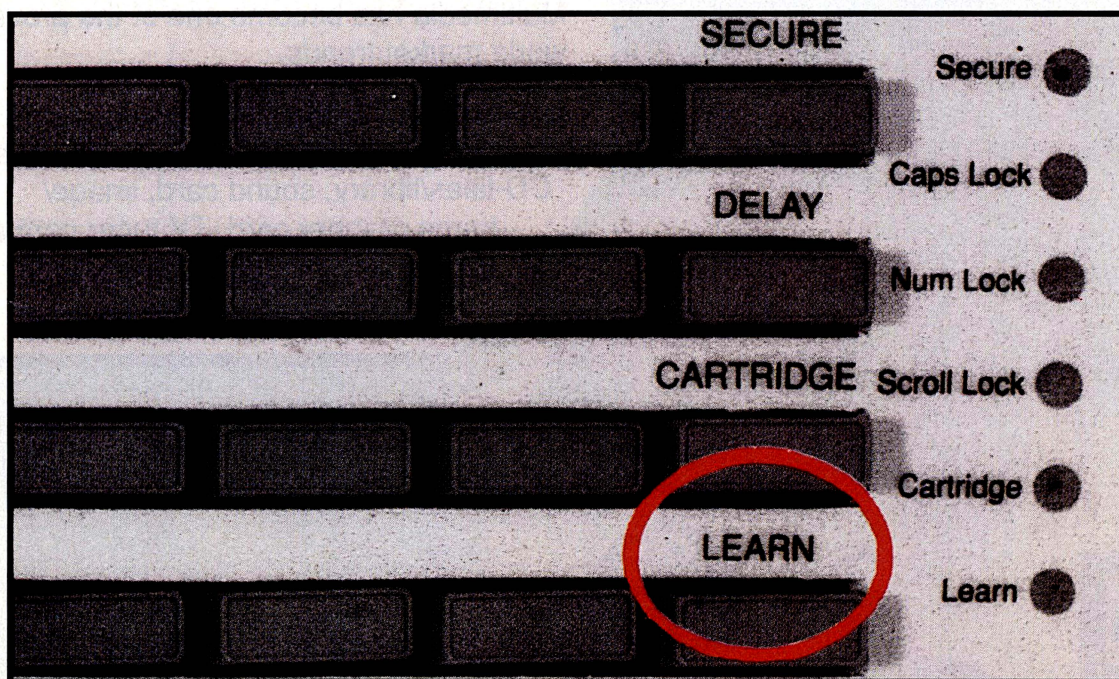
Central Station \$914. Digital Solutions (07) 883 1851, fax (07) 283 1217.

Futurus

Brisbane-based Digital Solutions has signed a distribution agreement with US-based publisher of LAN productivity tools, Futurus. Futurus' Right Hand Man II is a full featured e-mail package that requires 4Kb of memory. When a hot key is pressed, Right Hand Man will pop-up over any text or graphics based application including Windows. Features include e-



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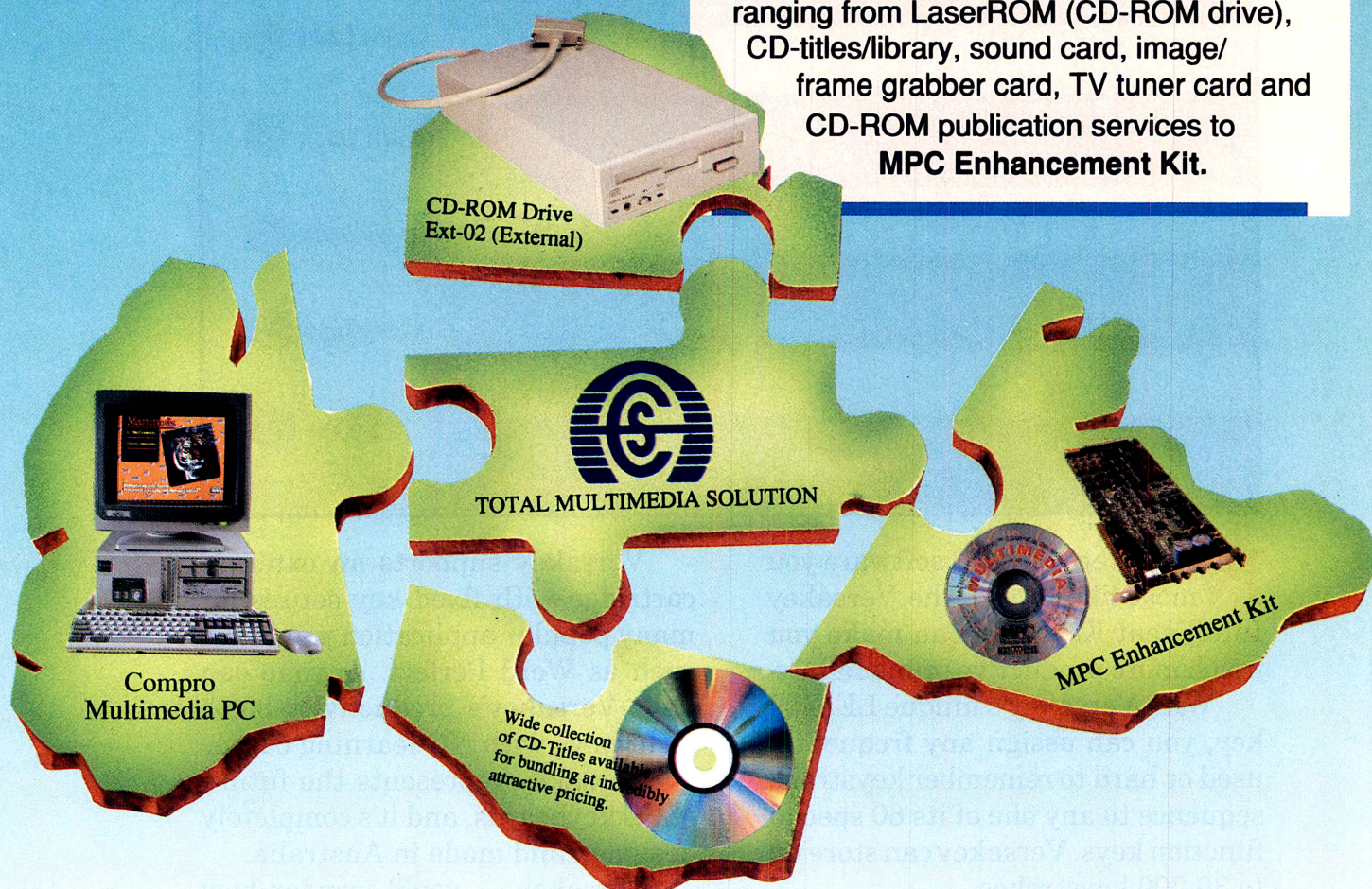
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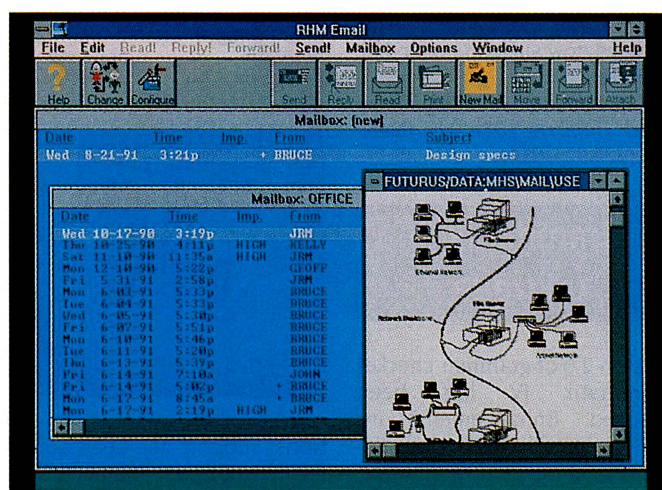
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RESELLER ENQUIRIES WELCOME!

mail, phone messaging, on-line chat, personal and group scheduling, calendar, note-pad, to-do lists, communications, keyboard macros, business-/programmers/scientific calculator, network print queue management, database, cardex, full fax capabilities and voice mail with optional artisoft sounding board and a DOS file manager. A new feature of Right Hand Man is called Universal E-mail which enables users to draft messages in their DOS applications, cut and paste data from other documents and then interface directly with Right Hand Man to send the message. Right Hand Man resides in memory until a user sends a document to the printer, at which time it will pop-up and enquire whether the document should be mailed. If so, the file is then captured and placed in the e-mail message area. The user



then addresses the message to individuals or groups from the central Right Hand Man directory and can attach files, interface with a remote mail system or fax the message. Right Hand Man is compatible with most popular networks. The Windows version of Right Hand

Man has all the features of the Standard version and is fully interoperable. The Wide Area Network version of Right Hand Man consolidates all users on a number of interconnected LANs into a global e-mail system. The Remote version of Right Hand Man integrates

both LANs and portable computers enabling communications between mobile employees and their office. Remote Users can quickly access electronic mail, phone messages and appointment schedules on the office LAN. This version also includes all the features of Right Hand Man II. Lite-Mail is a cut-down version of Right Hand Man II, designed to meet the e-mail and communication needs of any NetBIOS-based LAN. Lite-Mail was released concurrently with Netware Lite.

Right Hand Man II and Right Hand Man for Windows single user \$199; multi-user editions available up to 100 users \$6499. Right Hand Man Remote \$199; Right Hand Man WAN \$899; Lite-Mail \$79. A free, fully functional demonstration disk is available for Futurus products. Digital Solutions (07) 883 1851, fax (07) 283 1217.

The ultimate memory manager!

900K

of low DOS contiguous memory

Memory Commander® takes you beyond the first generation memory managers by freeing untapped capabilities of your 386 or 486 computer. Using advanced memory technology, Memory Commander provides up to 900K of low DOS contiguous memory, even on VGA systems! You will appreciate how quickly and easily it installs. It even relocates network drivers, TSRs and device drivers into high memory automatically. Memory Commander is Windows 3.0 and DOS 5.0 compatible.

Memory Commander

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Installs quickly and easily unlike other memory managers.

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Speeds DOS functions up to 200% by transferring slow BIOS ROMs into high-speed RAM and providing a built-in Video Accelerator.

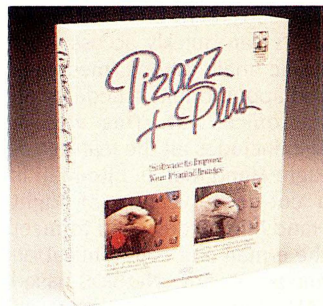
Increases available memory in the first megabyte by providing a built-in Video Accelerator, RAM disk and ANSI driver that operate from extended memory.

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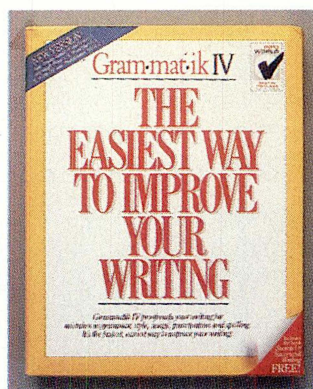


Jet 500C has been added – the package now supports over 430 printers.

Pizazz Plus v3.0 \$190. Technical Imports (02) 954 0248, fax (02) 925 0311.

Grammatik IV upgrade

Version 2.0 of grammar checker Grammatik IV has been released. Enhancements include a greatly expanded dictionary, 30 per cent more rules. The user dictionaries from WordPerfect and Microsoft Word can now be merged with Grammatik's own dictionary. A new correction option, Replace/Next, allows users to replace an error and move to the next problem with one keystroke. Installation has been made easier, mouse support is available for menu selections and op-



tions, support has been added for international character sets and a new attributes sub-menu allows users to customise screen colours. Word 5.5 and LetterPerfect 1.0 are now supported. The dictionary now has over 72,000 entries, including single word errors, split word errors ('with out') and similar word errors ('from' and 'form'). Grammatik can detect over 10,000 writing errors classified

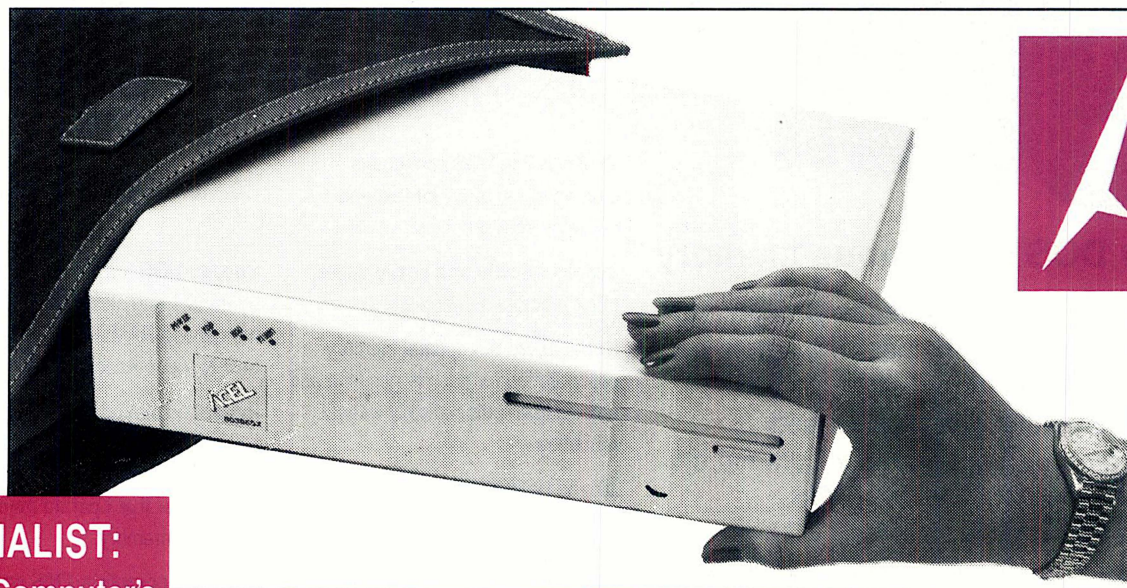
by grammatical errors, homonym and commonly confused word errors, capitalisation, doubled words, punctuation, style and word choice. Statistics are displayed after each checking session to point out potential readability problems. Version 2.0 supports over 40 word processors.

Grammatik IV 2.0 single-user \$169; 5-user \$499. Logo Distribution (02) 905 1844, fax (02) 905 6408.

Dynamite Pack

Soft-Talk has released the fourth 'pack' in its Dynamite series of shareware programs. The 40 5.25-inch disks in the pack hold over 350 programs. They include: The Bizz Pack (a basic accounting package for small business); Wampum (a dBase compatible database with application developer); The Lean Body Mass Program

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options that include mono or VGA high-resolution colour, up to 8MB RAM and 120MB hard disks, and 16-bit expansion slots.

For details, contact:

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7 The Corso, Norman Park, Qld 4170
Ph: (07) 899 2688 Fax: (07) 899 2700

(a collection of behavioural modification strategies for weight control); Journal (a utility for keeping and maintaining expense accounts; it includes an appointment scheduler); and QuestMaster (for creating animated, graphical adventures). The package also has a number of entertainment titles, including MCPop, a sexually oriented, possibly offensive game.

Dynamite Pack 4 \$49.95.
Soft-Talk (046) 26 3577.

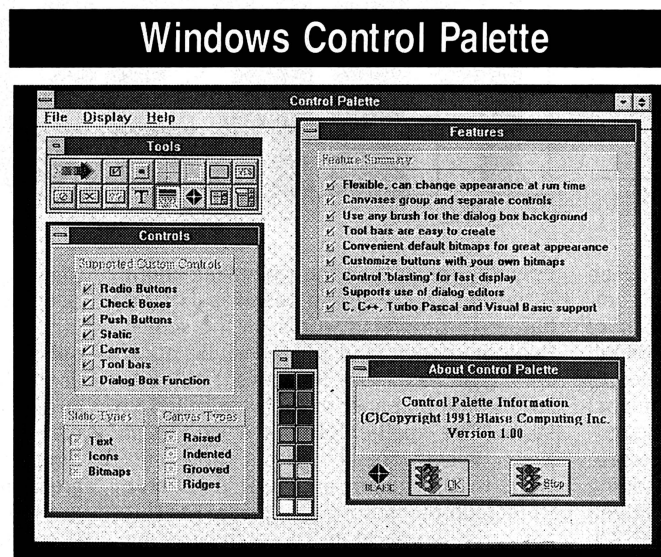
Customised labels

Labels Unlimited version 3 is now available. The software allows users to arrange text and graphics in 18 different layout formats with up to six different printing zones. Labels can be printed horizontally, vertically or upside down. Labels Unlimited includes over 40 PCX clip art images and additional files in that graphics format can be imported for use. Most label sizes (from 0.25-inch square to A4) and most printers (dot matrix and laser) are supported. A flat-file database is included – it has a 'ditto' function which automatically repeats on each label specified lines, and labels can be numbered sequentially for use as inventory labels or even raffle tickets.

Labels Unlimited 3.0 \$196.
Softcover Software (02) 957 4010, fax (02) 929 7198.

Artisoft's 10Base-T range

Digital Solutions is shipping Artisoft's new range of 10Base-T products. All hardware products in the range are compatible with LANtastic, Novell and many other network operating systems. 10Base-T Ethernet is a solution for buildings prewired with twisted pair cabling. A single node Network Operating System License is included in the price of each Artisoft Interface Card. The Artisoft AE-1/T Ethernet Adaptor (\$298) is



The Windows Control Palette is a set of routines that enhance Windows interface development by providing programmers with design options to customise applications. A wide range of colours and styles for creating controls, tool bars and dialog boxes is included, as are default bitmaps which can be used with the controls. Packaged as a dynamic link library (DLL), Control Palette is compatible with C, C++, Turbo Pascal, Visual Basic, SmallTalk/V and Actor 4.0.

Windows Control Palette \$295. MicroWay (03) 580 1333, fax (03) 580 8995.

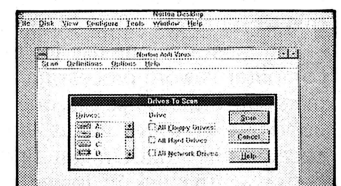
an 8-bit 10Base-T Ethernet adaptor which is Novell NE1000 compatible and 100 per cent compliant with the IEEE 802.3 Ethernet standard. Although the AE-1/T is an 8-bit card, it can access IRO-10 and -15 if used in a 16-bit slot. The card also has 8Kb of buffer RAM to boost performance and a status LED which aids in installation and trouble-shooting. The AE-2/T Ethernet Adaptor (\$454) is a high performance 16-bit card with both RJ-45 and AUI ports that will support either twisted-pair or thick coaxial cable. The AE-2/T is downward compatible with the Novell NE-2000 card. The on-board 16Kb RAM buffer can be upgraded to a full 64Kb which is ideal for file servers or workstations on a busy network. The AE-2/T can be used in either an 8- or 16-bit slot and will configure itself accordingly. An optional boot ROM is available for diskless workstations. The AE-3

Ethernet Adaptor (\$532) has all the features of the AE-2/T with the addition of a BNC connector. The card supports twisted pair, thin and thick coaxial cable. The Artisoft Peer-Hub (\$619) concentrator is a complete 10Base-T hub residing in a host PC. It has five external 10Base-T ports using modular RJ-45 telephone-style jacks that can connect to any standard 10Base-T adaptor. The Peer-Hub comes standard with network management software that allows the host to view the status of all ports, as well as enable or disable each port individually. The on-board EEPROM saves the complete network configuration in memory, guarding against a power outage. The Peer-Hub has three internal connectors designed to interface to other Artisoft products. One provides an internal 10Base-T connection to Artisoft's AE-1/T, AE-2/T or AE-3 Ethernet adaptors without

using one of the five external RJ-45 ports. Another internal connector is used to link multiple concentrators together – up to four per PC. The third option, with the separate purchase of an Artisoft AUI Interface Kit, provides an internal interface between the Peer-Hub's twisted-pair wiring and a thin or thick coax network. The AUI Interface Kit (\$610) facilitates an internal interface between an Artisoft's Peer-Hub and a thin or thick coaxial cable network segment. The AUI Interface Kit consists of a modified AE-3 card, two transformer chips and an interface cable. The 10-BASE-T Starter Kit (\$1364) contains two AE-1 Cards, a Peer-Hub, cables and network operating system. All Artisoft hardware products are covered by a five year warranty, 30 day money back guarantee and unlimited technical support.

See above for prices. Digital Solutions (07) 883 1851, fax (07) 283 1217.

Norton AntiVirus 2.0



Symantec has announced The Norton AntiVirus version 2.0. The new version includes virus defence for Windows DOS and networks, constantly monitoring file activity in the background. The package is compatible with Netware 286 and 386, 3Coms 3+Open, LAN Manager, Banyan Vines and AT&T StarLan. Virus definition updates are available through Symantec's BBS, (02) 879 6322; the company also runs the Virus Newline, (02) 879 7362.

Norton AntiVirus 2.0 \$219; upgrade \$50; virus definition update \$15 (available from 008 810 101). PC Extras (02) 319 2155. □

Would you like to earn some extra money? Why not use your PC? John Bailey offers a few suggestions . . .

PERSONAL

MY ATTENTION HAS been caught by an ad in the computer pages of a number of newspapers. It is only a small advertisement that is along the lines of 'How to earn money using your personal computer.' In their publicity pack, the purveyors of this information promise to provide details of hundreds of ways of doing it, after you send them some money. Well – quite a bit actually, something like \$200 or so. If you don't respond, they then make you a discounted offer or two.

This ad is duplicated in other specialist areas, and I have a feeling that the proprietors have a standard business line that provides information about how to make money at nearly everything that people might consider to be a hobby.

For those of you outside the city that are looking at turning the odd extra dollar, there are some opportunities using your computer, your experience or expertise and lots of time. *Your Computer* provides some of these ideas for the mere bagatelle that you pay for the publication. (Additional contributions will go toward flying this writer to the office Christmas party.)

The most obvious use for the personal computer is word processing and to write magazine articles like this one. The reason nobody ever writes about the subject is because the editor might find someone better; at the risk of losing my column, here goes.

Writing

WRITING ARTICLES involves rejection; if you can stand continuous rejection and criticism from editorial staff that have not read your article before they bin it, then keep going. Writing articles involves discipline. If you get to be even part way to a regular column you have to produce every month about eight weeks ahead of publication time. Producing articles is easy for the first few months, and then the inspiration dries up. Somebody once said that writer's block can be overcome by sitting at the keyboard and concentrating until beads of blood appear on your forehead. It doesn't work; immolation, flagellation, and lots of cold showers might.

Writing with a computer and word pro-

cessor is easier than the typewriter, and it is easier to make stupid mistakes. I find it harder to proofread words on the screen than on paper, and my pre-publication critic (She Who Must Be Obeyed) will only read words on paper or those chiselled in stone. The spell-checker is a wonderful piece of software. It corrects those silly typos that plague us all, but it is not able to pick up the word out of place. For this reason, it is important to watch what the thing is doing and still proofread your deathless prose. When I was taking word processing classes at TAFE, I was told by my ladies that the old-fashioned presentation of letters was out and that it was even allowable to use all upper case in letters. This of course defeats the purpose of a word processor and computer presentation apart from making things hard to read. The machine can duplicate anything you want, perfectly. Use the machine and make your output look as good as possible.

*Somebody once said that
writer's block can be
overcome by sitting at
the keyboard and
concentrating until
beads of blood appear on
your forehead.*

Of course you will be writing for an editor that actually wants your work. The usual form is to find out in what form the story should be presented. Some editors only want hard copy double-spaced, some want the story on disk in ASCII form, so find out. This magazine publishes story guidelines on the editorial page.

Most editors seem unable to write letters explaining their arrangement with contributors. Fortunately the vast majority are honest souls with scrupulous ethics,

they expect you to be the same. Editors don't want a second-hand article or another person's work reshaped. If you use one person's work it's plagiarism, if you use half a dozen sources it's research. I guess we have all seen the same article in two or more publications at once. It is tempting to do this because the pay isn't great unless you are of Buzz Kennedy stature, so go easy with the power of your computer. Don't be seduced, the editor wants fresh stuff.

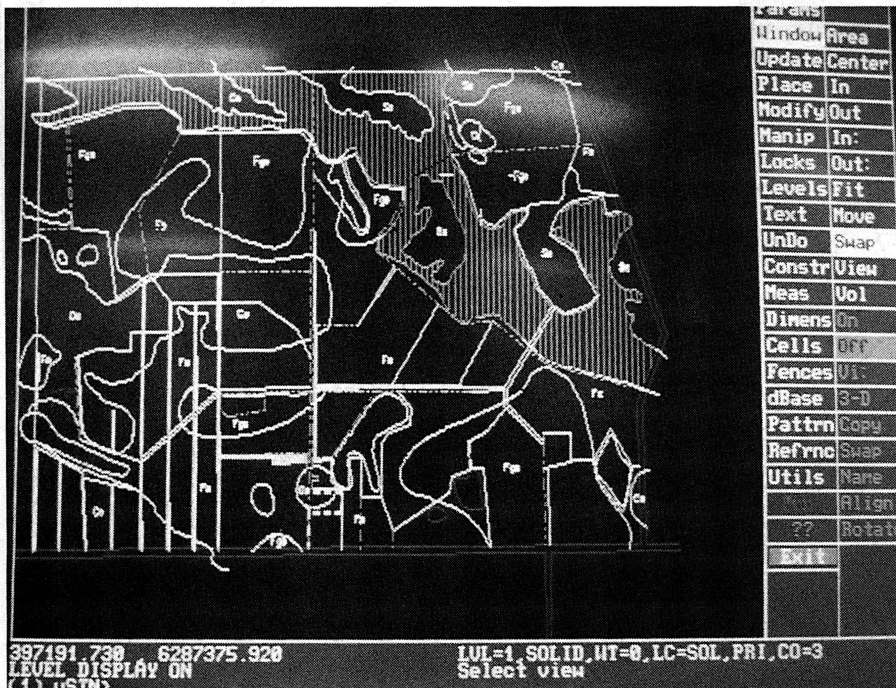
Photographs are sometimes required, I hired a professional photographer for a while but he went to television, so I had to learn how to make pictures of a computer screen. It's easy. Buy a good manual camera like the Pentax P30n and waste a lot of film. Screens are best taken in the dark with 400 transparency film using a tripod and anything from four to one second on a wide aperture. I use the automatic timer trigger to take the pictures, but occasionally found a red light in the frame. It was the reflection of the timer light. Some blue tack over the light stopped that, and the use of a polarising filter cuts out most other reflection on the screen.

Talking of pictures, duplication and your work, brings us to copyright and your rights. The rights to your work generally revert to you after it is published – but check when submitting the article to make sure. If you are paid for an article and also supply photos, but the pay slip only mentions payment for the article, then you might claim ownership of the photos at some time in the future. If you do get picky then that editor might not want you again, so make sure that you feel it is worth it. If more than half your income is earned from writing, then the AIA will allow you membership and you can get their help over pay rates and copyright and so on.

Other ways

ENOUGH OF WRITING, what other ways might your PC turn an honest dollar? Word processing and typing if you have those skills and the preparation of letters and documents. A standard one is the preparation of curriculum vitae for people. This sort of service demands very good output, so you will need to own at least a laser

CASH MACHINE



printer, but the computer need not be so smart. If you take this a step further and provide a desktop publishing service, then the computer power will also have to be stepped up. Most DTP systems require at least AT ('286) power to run usefully, and extra memory speeds things up a lot. The combination of a fast computer and laser printer allows you to offer a personal mailing service to people and businesses instead of the usual blanket mailing. Equipment and consumables can be expensive in this sphere so you can't afford too many errors.

If you write articles, they will sometimes be cut by blind, illiterate sub-editors.

If you have talents in other directions, you may use your PC to extract some extra revenue from these talents. You may have done a land management course and wish to hire yourself out as a farm-planning consultant, the computer will help in circulating your information and later you may use it to produce and plot farm plans.

There are a number of limited circulation specialist publications available and some of these are simply the extension of one person's expertise in that field. If you have an interest and ability in say, cottage industries, then you might profit from the production of a newsletter on the subject. Of course you need to be either well recognised in the field or have some valuable message to sell.

I hope this gives you all some ideas, and just remember a few simple rules. Include a double-spaced hard copy with anything on floppy disk. Label everything with your name and address (so they know who to pay). The customer is always right. If you write articles they will sometimes be cut by blind, illiterate sub-editors – such are 'the slings and arrows of outrageous fortune'.



If you have talents in other directions, you may wish to use your PC to extract some extra revenue in these ways. You may have done a land management course and wish to hire yourself out as a farm-planning consultant and later use your PC to produce and plot farm plans.

FREE READERS' CLASSIFIEDS

Weather Fax

Weather Fax programs for IBM XT/ATs. RADFAX2, \$35, is a short-wave weather fax receiving program. Needs CGA and RADFAX decoder. Also RF2HERC, RF2EGA and RF2VGA, same as RADFAX2 but suitable for Hercules, EGA and VGA cards respectively. SAT-FAX, \$45, is a NOAA, Meteor and GMS weather satellite picture receiving program. Needs EGA or VGA colour system, plus Weather Fax card. Supplied on 5.25- or 3.5-inch disks (state which) plus documentation, add \$3 postage. Only from M Delahunty, 42 Villiers Street, New Farm 4005 Qld, (07) 358 2785.

IBM JX and Junior software

Shareware software for IBM JX (and Junior) computers. Suits 128Kb, 256Kb RAM and so on. Programs only \$10 each. For a free catalogue write to Microtech Software, PO Box 145, Lilydale 3140 Vic, (03) 739 6269.

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Over 5Mb of the latest shareware games for IBM compatibles with EGA or VGA monitors. Includes Duke Nukem, Last Half of Darkness, Commander Keen, Sherlock plus many more. Would cost at least \$65 if bought separately. The lot for only \$19.95. Please specify 5.25- or 3.5-inch disks. Send cheques/money orders to Sharesoft, 8 Kareda Court, Hillbank SA 5112. Enquiries (08) 255 4505.

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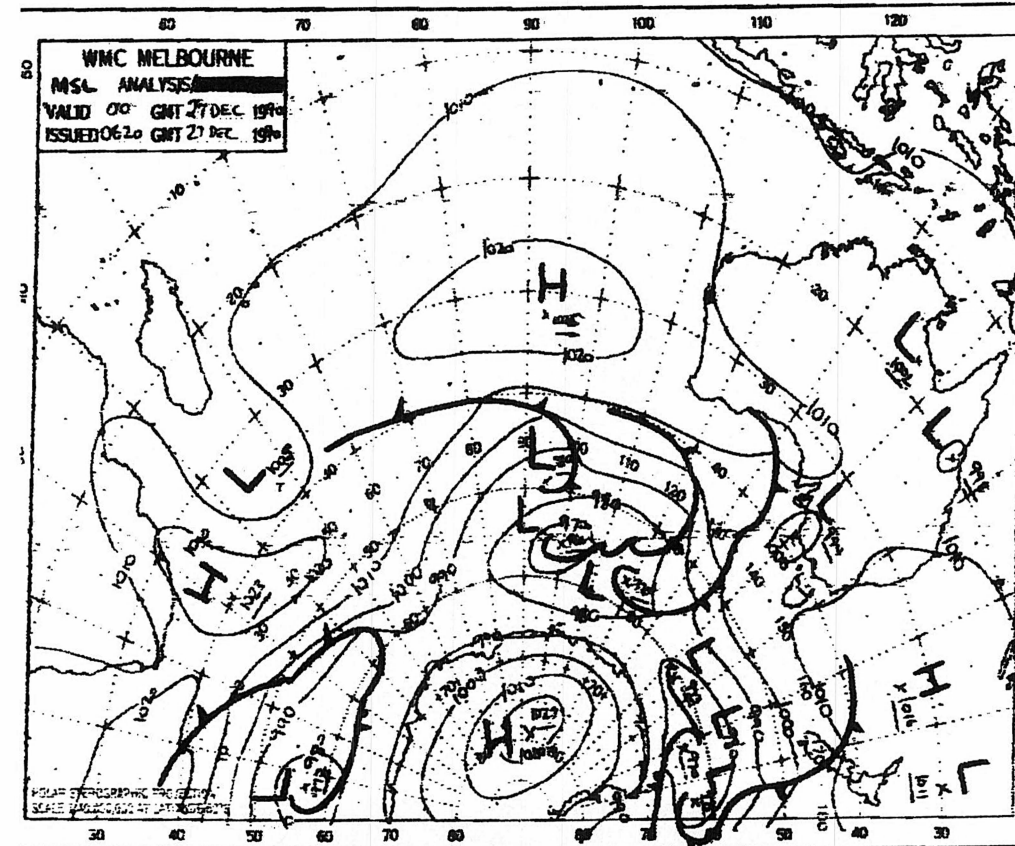
Unused mouse, still in packet, includes mat, holder, software. Unwanted Christmas present. Retail \$88, selling \$60 ono. Phone Peter (02) 597 7735, Bexley.

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Fastcopy

Solve DOS copying problems with Fastcopy, no more disk swapping. Copy all disk types in one read and one write, including high density. Also available is Address Database - use it to store thousands of addresses,



quick and easy to use, prints mailing labels. Send \$12 for either one (specify which) or \$20 for both. (Specify 3.5- or 5.25-inch). Send cheques/money orders to Steven Bruce, PO Box 10, Wilbourforce 2756 NSW.

For sale

Own or interested in the video cassette size MS-DOS Portfolio PC? I have four full 3.5-inch disks on the subject at \$5 each. #1 Review/Info, #2 PBasic 4.9, #3&4 PD. At my price of \$380 it is now in the class of a low cost 8088 micro-controller, or use it as a PC or Personal Organiser. Also have the XT/AT Handbook by Choisser and Foster. Pocket size 92 pages. For engineers and programmers and other serious PC/XT and PC/AT users. A collection of hardware and software facts and data on the PC compatible family and its operating system. Latest edition. This is the one advertised

by Annabooks in US mags *Byte*, *Dr. Dobbs's Journal* and so on. \$20 including postage. Five or more \$15 each. And a 2.8Mb BackPack External Disk Drive for PC/XT/AT/PS1/PS2 and so on. No internal connection. Runs off compatible printer port. Printer

still supported. Simple installation. Suit laptops or any PC upgrade. 3.5-inch 2.8Mb drive accepts 1.4Mb and 720Kb disks. \$599. 5.25-inch 1.2Mb drive accepts 360Kb disks. \$499. Don McKenzie, 29 Ellesmere Crescent, Tullamarine 3043 Vic. □

FREE CLASSIFIEDS are for readers only, not commercial organisations. The first 20 words are accepted free of charge with a charge of 30 cents for each additional word. Good quality black-and-white prints may be included for a charge of \$20 each. Multiple classifieds in one issue are treated and charged as singles. For details contact *Your Computer* on (02) 693 6666 or write to PO Box 199, Alexandria 2015 NSW.

COMMERCIAL ORGANISATIONS can place classifieds for a charge of 50 cents per word (minimum charge \$15). Black-and-white photographs may be included for a charge of \$30 each.

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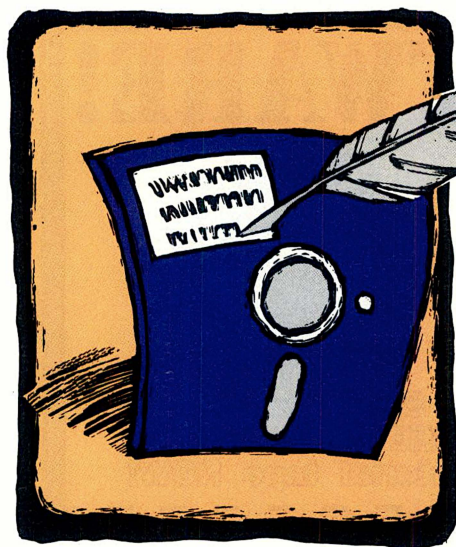
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tor, but there was no listing for the Dr.T distributor.

John Grant

Music Link Australia

Our apologies to Music Link and any readers who may have been misled about the distributorship of Dr.T's software in Australia. Music Link can be contacted on (03) 429 9299, fax (03) 427 0740.

Mark Cheeseman's reply: I agree the statement to which you refer could be a little ambiguous. I hadn't intended to imply that NetComm was in any way involved in selling unapproved modems, but rather, that NetComm is the only distributor of Austel-approved TrailBlazer modems.

Here's your chance to air your view or gripe about the computer industry, or to ask about a problem you've been unable to solve.

Write to: Write Bytes, Your Computer, PO Box 199, Alexandria 2015 NSW.

Dr.T

In your January issue, Eric Holroyd reviewed Dr.T's X-oR. Unfortunately, the article did not make clear that the distribution of Dr.T's software in Australia for the Commodore Amiga is shared between Computermate and Music Link, while we are the distributor for the IBM, Macintosh and Atari computers. This concerns me since our advertisement in the same issue appears to contradict the editorial.

Secondly, I read with interest the December issue, with its long article concerning music and computers. It included a report on Dr.T's Copyist. I appreciate that we were listed as the Prism distribu-

We read with interest Mark Cheeseman's recent editorial re Austel's crackdown on unapproved modems. Being Australia's largest modem manufacturer, this subject is obviously near and dear to our heart. As he points out, there are very good reasons for Austel standards, and it is NetComm's practice to only market products approved by this regulatory body.

Could I ask a personal favour; could you please make clear to your readers that the local version of the Telebit TrailBlazer, available from NetComm, is fully approved by Austel, to connect to the PSTN. Although you do mention this later in your article, the statement to the contrary caught our eye.

NetComm has represented Telebit since 1986, and from this date has offered a localised (legal) version of the TrailBlazer. There were some delays in receiving the multi-national version of the latest V.32 TrailBlazer, and some less ethical modem users may have imported an illegal US version. These are easy to distinguish because quite simply, the Australian (legal) version is branded 'NetComm', and the US (unapproved) version is branded 'Telebit'.

Chris Howells,

managing director, NetComm

Multimuddia

When are dealers going to get up-to-date and find out what is going on in the world? I've been trying to put together a multimedia system, using my '386, but haven't had any joy from my local [Perth] dealers. After trying at least half a dozen, I've found no satisfaction at all. The big problem is none of them sound as if they know what they are talking about (maybe they do, but they don't sound like it). They know enough to try and flog me a CD-ROM drive and sound card, but there it stops. My questions about whether I should get a larger hard disk and more RAM are invariably met with an answer along the lines of 'sure, we'll sell you those things', but none of them could really say why they would be necessary.

John Martin

You're in luck living in Perth, not only do you have more hours of sunshine each year than the rest of us in other capital cities, but two of the leading suppliers of multimedia equipment in Australia are locals. Try Computer Oasis, (09) 227 6262, and Computerware - these guys do know what they are talking about. For further information, try Alldata which puts together its own multimedia system, (03) 794 5799, fax (03) 794 0668 - and check out Keir Wells' articles in August, October and February issues. □

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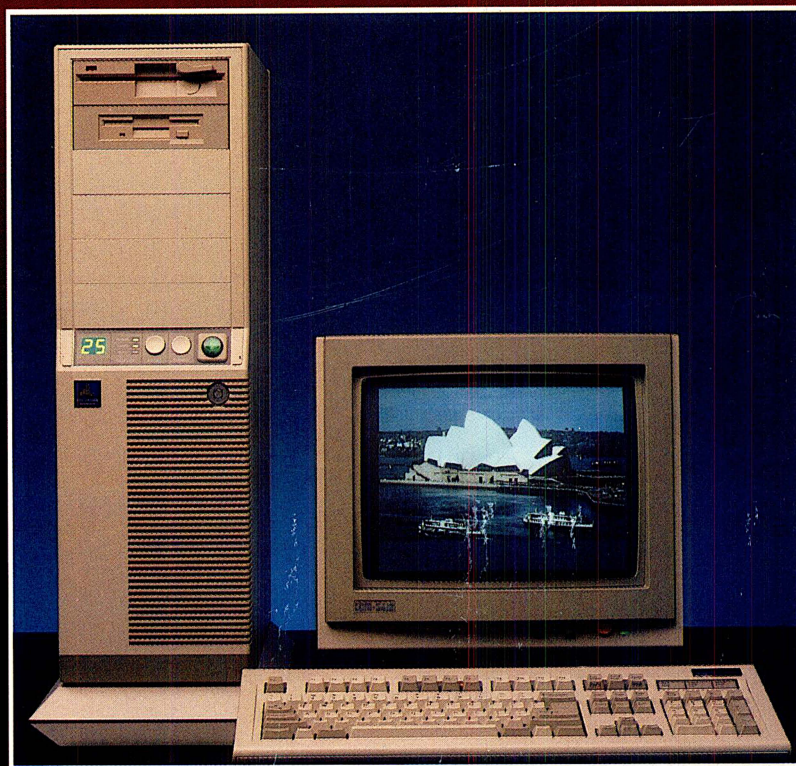
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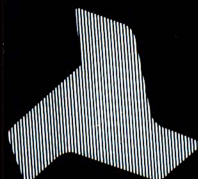
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